MONTANA
OUTDOORS

JANUARY/FEBRUARY 1972

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EDITORIAL CREED

To promote the preservation of a livable environment for wildlife, which is a quality environment for man

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MONTANA OUTDOORS

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THE COVER

In Montana, hunters often find themselves walking or riding hours before dawn in order to be at the right place at first light. The hunter and his guide on the front cover are riding along a high ridge in the Sun River country looking for elk. The sunlight on the back cover silhouettes a golden eagle—the feathered king of the western skies. The regal one has long been persecuted by his only predator—man. Both covers are department photos taken by Gus Wolfe.

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editorial

our first movie review

If you should ever get fed up with "we must conserve a quality natural environment" preaching and decide to do your own little thing to impair conservation education, here's one way to go about it.

First, you find an isolated case of savorless animal management such as commercial shooting of a domesticated buffalo herd in Arizona. And then you fabricate a movie script that focuses on the inhumane aspects of the operation, carefully concealing some facts and misrepresenting others so that you will be sure to accomplish your purpose . . . which in the case of "Bless the Beasts & Children," produced by Stanley Kramer, is to discredit the American hunter and raise support for stricter gun-control regulation.

Kramer's film version of Glendon Swarthout's book (reviewed on page 37) will never be "blessed" or in any way encouraged by this magazine or any other department information source.

In my opinion, the "cut and paste" method of movie production was used to convey a misleading and damaging impression to the viewers, many of whom are young and vulnerable adolescents. Some will even depart with the thought that hunters would just as soon shoot children as they would a buffalo or any other animal.

Kramer doesn't shrink from publicizing the film's purpose. BROADCASTING magazine stated, "The most important thing that could happen, as Mr. Kramer was concerned, would be for his movie to raise such a ruckus that maybe it would bring about the enactment of more comprehensive and restrictive gun control regulation."

In the film Kramer builds his story around the controversial operation of a state-owned domesticated bison herd . . . a herd of animals which in this instance are nothing more than another species of livestock. For years, outsiders have been invited to shoot a buffalo for $40, admittedly a controversial method of thinning domestic herds.

I agree that this particular action is in somewhat poor taste, but whether or not someone chooses to rip off at a buffalo casually grazing in its pasture is his or her personal affair. I would class it with several other dubious personality quirks that are best left unpublicized. However, when a movie implies that this scene is somewhat representative of the American hunter and/or gun-owner, I feel obligated to let our readers know of its misguided objectives.

The film labels bison "animal dings," which means that they are of no use to man and must be killed. The real reason for the killing, however, was left in the editing room. A herd of domesticated animals periodically outgrows its pasture and makes it necessary for some to be marketed. Instead of being shipped off to a slaughterhouse like cattle or swine, the bison are shot.

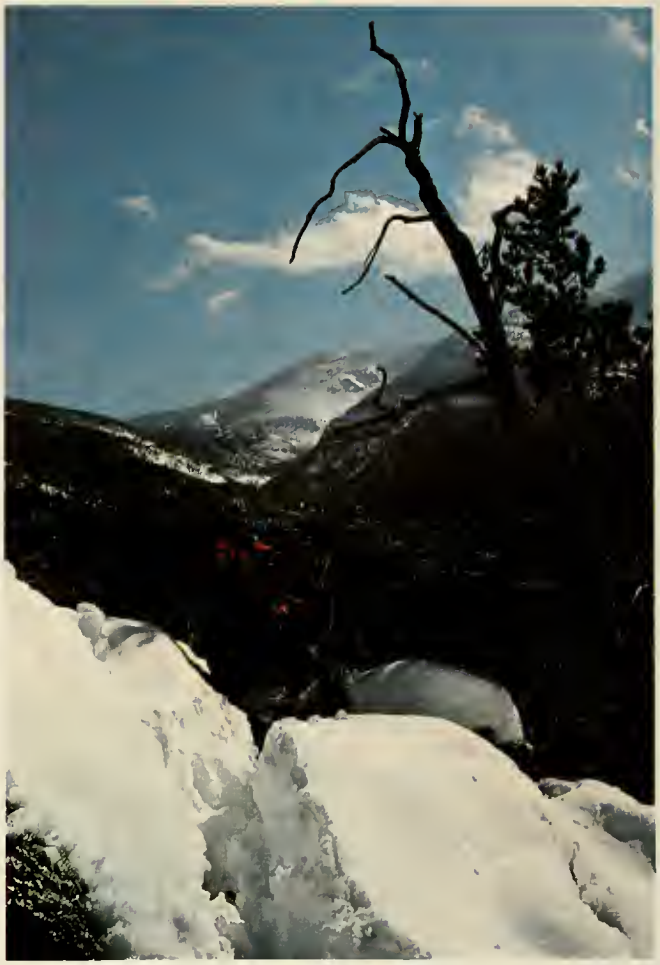
My point is this—the bison in this show cannot be likened to any wild animals nor can their killing be compared with the pursuit of sport hunting. Unfortunately, I fear that many viewers leave the theater with these false impressions imprinted in their minds.

By badmouthing the hunter, Kramer has done his thing to hamper the conservation of our natural resources and especially wildlife. Hunters devote their time, money and other resources to the continual promotion of a quality environment for wildlife and man. If this film helps swing public opinion in favor of stricter gun control, the hunter's century-old conservation efforts could be crushed. Much of the money used in conservation work comes from taxes on guns and ammo. Without these supplies, hunters won't buy as many hunting licenses. The resulting loss of federal matching funds coupled with drastically reduced license fee income would, in short, assassinate your fish and game department.

To slash 50 or more state fish and game departments from the conservation scene would thus be "your own little thing" . . . except that it wouldn't be so little. It could possibly eliminate the scientific management of wildlife and guarantee a steadily worsening environment for everyone.

—Bill Schneider

THE COVER STORY



A hunter prepares for a long shot on a steep slope in the Lewis and Clark National Forest. Does he know it could be his last hunt on public land? (F&G photo by Gus Wolfe)

the hunter

Is he endangering our wildlife or is our wildlife endangering him?

by Bill Schneider

DURING the past year a powerful anti-hunting movement has sprung up on the urbanized East Coast and has now spread across the nation. Although there will always be opposition to hunting, the sport in now in special danger.

The new no-hunt clique differs from earlier ones. This time it's organized and has money, big names, lobbyists, lawyers and politicians behind it. In the past, most anti-hunting sentiment and conflict involved only "please don't kill all our wildlife" emotionalism. However, the new clique has invaded congressional and legislative chambers with detailed plans that will, if enacted into law, step-by-step end the joy of the hunt, crush the nation's overall conservation effort and destroy 50 state fish and game departments.

Using the urban news media and the film industry to support popular and often false rumors of cruelty and inhumane acts, these people are attacking hunters as "murderers" of wildlife. They give all wildlife the "bambi" image and use it to discredit hunters and thus draw closer to their goal—a complete ban on sport hunting.

In view of all this, the American hunter can very easily consider himself an endangered species.

LAW-MAKERS AND HUNTERS

Louis S. Clapper, Washington editor for the National Wildlife Federation, was one of the first to notice and speak out against this most recent attack on hunting. In his regular column in the August/September 1971 issue of NATIONAL WILDLIFE he wrote, "A storm is brewing over the so-called 'Ocean Mammal Protection Act' (S. 1315, H. R. 6558), first in a series of efforts

planned to outlaw the taking of wildlife by all means, including hunting, on all federal lands."

This "storm" is now over Washington, D. C., in full fury. The act, introduced by Senator Fred R. Harris (D-Okla.) and Congressman David Pryor (D-Ark.), would wrap marine mammals such as sea otters, fur seals, whales, walruses and polar bears in a cloak of complete protection. This, of course, would not allow scientific management or economic harvest of these species. For example, one directive of the Harris-Pryor bill would end U. S. involvement in the annual fur seal harvest on the Pribiloff Islands off the Alaskan coast. The international fur seal herd is presently thriving and in no danger. In fact, it's often viewed as a classic example of man's effort to conserve wildlife.

During the 18th and 19th centuries, fur seals were intensively hunted for their commercially valuable pelts. After decades of uncontrolled harvesting, the fur seal almost disappeared from the North Pacific. In following years, international agreements banned pelagic (open sea) seal hunting and closely regulated the harvest on the Pribiloff breeding grounds. Since then, the herd has prospered and stabilized. Currently, 50,000 3-and 4-year-old bachelor males are harvested each summer. Females and pups are never taken. These males represent a harvestable biological surplus whose removal has no adverse effect on the overall seal population.

The annual harvest of bachelor fur seals is undoubtedly far from the minds of most hunters. However, this act, if passed, would form a solid base for later anti-hunting legislation. Even though it was strongly opposed by conservation organizations at public hearings, the act is still pending in Congress.

The proposed ban on hunting would crush the nation's overall conservation effort.

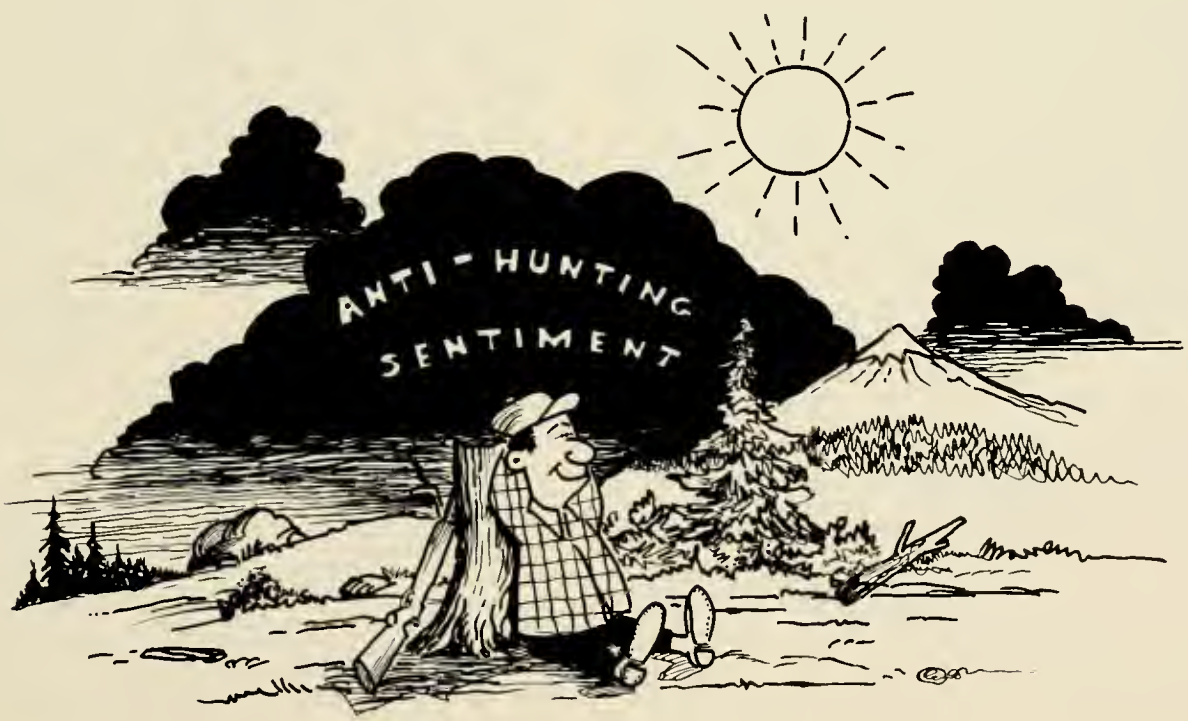
How do such bills get the support of politicians? It's really quite simple. The lawmakers see a surge of public sentiment over the "brutalities" of hunting and decide that a complete protection bill would be a wise political move. Thus the future of wildlife, hunting and conservation is conveniently traded for votes.

Also capitalizing on public concern for the plight of wildlife is the urban media, especially the film industry and TV networks. The filmmakers should be commended for devoting so much footage to the problems facing wildlife. Unfortunately, in many cases they create or magnify problems instead of helping to solve them.

"SAY GOODBYE"

A notable example is the NBC production, "Say Goodbye," aired nationally on Jan. 8, 1971.

Illustration by Vern Craig.



After its showing, a shock wave passed through the conservation world. Many feared that in one single hour the progress of conservation education had been set back years.

In February the special was unanimously selected as the "worst conservation movie of the year" by more than 50 outdoor writers during a Chicago meeting. On Feb. 26, Chester Phelps, president of the International Association of Game, Fish and Conservation Commissioners, addressed a letter to Julian Goodman, president of NBC, and asked him to ". . . insure that future conservation programs are accurate and do not contain contrived, albeit, sensational, segments. Through the exposure provided by your network and affiliates, the public has been misled about this matter, and I submit that the National Broadcasting Company has a duty to correct this false impression." A copy of the letter went to Dean Burch, chairman of the Federal Communications Commission.

The special opened with scenes of a badger fighting off a grizzly bear and a deer defeating a cougar . . . unlikely feats that only brought snickers from informed sportsmen. The film went on to describe problems facing rare wildlife. In some cases, the plight of a species was incorrectly blamed on hunters. However, the real damage was done when the camera showed a man, apparently illegally hunting with an aircraft, shooting a mother polar bear with two cubs (which is an unlawful act in itself).

"The camera showed a closeup of the mama bear, supposedly shot, twisting in agony while the cubs looked on pathetically. The camera returned repeatedly to the cubs hovering in the icy winds, and the implication was clear—hunters are horrible people." . . . in the words of Charles Dickey, director of the National Shooting Sports Foundation. In reality, the bear wasn't killed at all. She was "shot" with a tranquilizer gun and tagged by game biologists working for the State of Alaska. She recovered a short time later and probably still roams the ice flows with her cubs.

Film producers sometimes magnify the problems facing wildlife.

Numerous state conservation agencies and commercial sports publications objected to "Say Goodbye." Clare Conley, editor of FIELD & STREAM, had this to say in the April issue: "Why should Dick Cavett . . . have David Wolper, famous for his contribution to the no-hunt cause with 'Say Goodbye,' on his show and let him casually intimate that a minority group complained?" Conley posed this question just after he had generously estimated the membership of the anti-hunting groups at less than 500,000 and compared it with the 20 million who buy hunting licenses.

The false sequences aired in "Say Goodbye" bring to light another interesting question which was recently voiced by Bill Clede, president of the Outdoor Writers Association of America. He said, "The false depiction, although severely damaging the image of millions of sportsmen, involves a more basic problem for all Americans. Who has responsibilty for truth in documentaries—the network, the producer or the sponsor? Why shouldn't all three be responsible for truth on the public's airways?"

In the case of "Say Goodbye," all three denied responsibility for deliberately misleading the viewing public. It didn't seem to bother NBC, Wolper Productions or the sponsoring Quaker Oats Company that the true story of "Say Goodbye" was left on the editing room floor.

Regardless of the consequences, "Say Goodbye" is now gone (and professional conservationists hope forever); but its sensationalism will linger on. A letter received by Warren Page, former shooting editor for FIELD & STREAM, is one example of the everlasting impression such a production can leave on a viewer's mind.

A lady from Iowa wrote: "After watching 'Say Goodbye,' . . . which dealt with the senseless killing of our dwindling wildlife, I picked up the latest issue of FIELD & STREAM and came upon your picture. There I saw your smug, masculine face holding a large gun in your masculine hand and squatting (in a very masculine way) over a dead lion which you had bagged with your rifle. You look very proud, Mr. Page . . . But here is one person who is very sick . . . Mr. Page you are a MURDERER!" After further condemning hunters and sports magazines she concluded, "You haven't heard the last of me, you murderers!"

WOMEN

The lady's pungent words illustrate another point. Although men are also taken in by false depictions of hunters as gun-toting radicals whose sole purpose is to destroy wildlife, women and children seem especially susceptible.

Friends of Animals, Inc., a very outspoken anti-hunting group from New York City, is headed by a woman, Alice Herrington. Its membership

includes many other women, some of them well-known actresses.

It was this group that spearheaded the fight to "save" the deer in New Jersey's Great Swamp Refuge (see editorial, Nov./Dec. 1971 issue of MONTANA OUTDOORS) and curtail scientific management of the herd.

One of the moves to defeat the hunt was an advertisement in the New York Times. The broadside, published by Friends of Animals, Inc., ridiculed the "psychotic behavior" of hunters. The ad was signed by nine female show business celebrities—Shelia MacRae, Betsy Palmer, Patrice Munsel, Ali MacGraw, Jane Havoc, Lauren Bacall, Gloria De Haven, Joanne Woodward and Gretchen Wyler.

The "Friends" also formed the nucleus of the Committee for Humane Legislation, Inc., an organization with the publicized purpose of ending the magic of the hunt with a congressional barrage. The committee has proudly circulated its legislative goals, the first of which is the protection of ocean mammals. Its number two goal strikes closer to home—a ban on hunting, shooting, trapping and all other taking of wildlife on all federal public lands. This is why the defeat of the Harris-Pryor bill is so important to sportsmen and especially western hunters. Public land makes up one-third of the nation and one-third of Montana. It hosts a large share of western game populations. In Montana its closure would almost end big game hunting by the non-landowning public.

INHUMANITY

Certainly, most anti-hunting propaganda centers around the undeniable fact that many hunts end in the death of one or more animals. This makes it easy for the nonhunters to label hunters as "murderers" of wildlife and to accuse them of sordid acts of inhumanity.

In truth, hunting ranks as one of the most humane methods of harvesting wildlife. When the hunter's eye is sure, death comes instantly. True hunters strive to prevent poorly placed shots and often pass up game when they aren't sure they can make a clean kill.

Women seem more vulnerable to anti-hunting propaganda than men.

How long does it take a deer to starve in a stand of even-aged conifers?

Marine mammals were most likely picked by the Committee for Humane Legislation for their first complete protection act because of numerous and historic tales of inhumane treatment. In the 18th and 19th centuries fur seals, sea otters and other marine mammals were flagrantly mismanaged. However, inhumane methods used then are taboo today.

In fact, Maurice H. Stans, Secretary of Commerce, has just recently announced that a panel of six veterinarians selected by the American Veterinary Medical Association has found the annual fur seal harvest to be "humanely and efficiently conducted."

Following the panel's findings Stans said, "I hope this will put to rest once and for all false rumors of brutality and poor conservation practices being circulated by a few vocal critics. We now have the truth from a highly qualified and impartial source."

Vermont citizens opposed to hunting because it causes death should now begin to seriously wonder about how high hunting ranks on the inhumane death scale. During the 1969-1970 winter, the state experienced the worst deer winterkill ever documented in this country, according to the National Rifle Association. Approximately 40,000 deer perished, mostly from malnutrition. In the preceding "bucks only" hunting season, only 18,-789 deer were harvested. If more had been taken, fewer deer would have died from gnawing hunger and a renewable biological surplus would have been utilized for food and recreation. Nonhunters will probably agree that death via a hunter's bullet is quicker and more humane than months or even years of slow starvation in a food-bare Vermont forest.

A MANAGEMENT TOOL

Remove hunting from the game manager's toolbox and Mother Nature automatically becomes

the grim reaper of wildlife. She reduces her game populations to the correct level with not-so-motherly population controls such as disease, starvation and severe weather.

Anyone condemning hunting because it causes death should first ask himself these questions. How long does it take a deer to starve in a snow-filled stand of even-aged conifers? . . . or for a pheasant to surrender its life to a Dakota winter? . . . or for a bighorn sheep to die from infectious lungworm? Days? Months? Years? How much agony is sustained? Are these deaths more humane or moral than death by a hunter's bullet or arrow?

Some nonhunters will be right there with the answers. They will say, "Sure they're awful, but that's Nature's way. Death is a natural thing." And they're right. Death is certainly part of Nature's plan. However, in her natural scheme of things, death by disease, starvation and severe weather is meant to stabilize populations by removing aged animals which become more vulnerable to these agents. Healthy, well-balanced wildlife populations are able to fend off drastic reductions from these limiting factors. The Vermont deer population was too large to be healthy. The range simply could not support that many deer.

When man moved in on wildlife, he took what belonged to the animals and plowed it, cut it and burned it. The result was (and still is) a steadily declining supply of wildlife life essentials — food, water, nesting areas, living space, escape cover or, in short, habitat.

Habitat (or lack of it) dictates how many animals can live from year to year in a certain area. The lack of an adequate hunter harvest coupled with a dwindling habitat creates unhealthy wildlife overpopulations which, in turn, become very susceptible to disease, starvation and weather. In Vermont, the deer had increased to the point where they had outgrown and overused their habitat until the entire herd was so weak that it easily yielded to winter weather and food scarcity. Chances are that another winterkill will occur this winter and in future winters unless something is done to balance deer numbers with their remaining habitat. In this particular case, the solution is simple — more lenient and antlerless deer hunting seasons.

Hunters take the place of predators in Nature's scheme

A wildlife population can increase in numbers only to a certain point (the carrying capacity of the habitat) and still maintain its healthy physical condition. After the carrying capacity (set by the quality and quantity of habitat present) is reached and surpassed, the entire population — not just a few weaker individuals—begins to suffer. An excess of animals overuses the habitat and decreases its ability to support wildlife, thus lowering the carrying capacity for future generations.

Most wildlife, especially game species such as deer and pheasant, is quite prolific and tends to overpopulate in the absence of limiting factors (e.g. food or water shortage, disease, predation or hunters). In order to objectively assess sport hunting, this most basic truth of game management must be known — *wildlife cannot be stockpiled.* It's a renewable natural resource that, if not harvested, will eventually destroy its habitat and force its own drastic population reduction. Wildlife populations that have reached their carrying capacity produce a biological surplus that can be removed without adversely affecting the overall population (e.g. bachelor fur seals). This surplus will be trimmed naturally if it isn't artificially reduced by hunting or another form of regulated harvest.

The primary obligation of game management is to see that this renewable surplus is available for economic gain and outdoor recreation. Game managers carefully regulate game species to insure that the removal of surplus animals doesn't dip into the breeding stock of the population.

Wynn Freeman, chief of the department's Game Management Division, summed it up in the division's new book, *Game Management in Montana.* In the preface he said, "To permit an increase of any wild bird or animal over and above the available food supply is to destroy that bird or animal as surely as by overshooting."

A dyed-in-the-wool nonhunter would probably refute this by saying, "Well, there's always been disease, food shortages and bad weather . . . a long time before millions of hunters started destroying our wildlife. How come wildlife is so scarce now?"

And he's right again. Wildlife is "still losing and at a slightly faster rate," according to the National Wildlife Federation. However, at least two noteworthy differences exist between "then" and "now."

First of all, the supply of quality wildlife habitat has been on a downhill slide for many decades.

And without a solid foundation of good habitat, no wildlife population can increase its numbers substantially.

Secondly, before man began to play an important role in the lives of wildlife, Mother Nature had little trouble perfectly balancing wild animals and their habitat for the betterment of both. The natural predator-prey relationship kept prey species (e.g. rabbits, pheasants, deer and rodents) at a level not damaging to their habitat.

However, since predators (e.g. coyotes, eagles, mountain lions, bears, wolves, foxes) are sometimes big, have long teeth and always kill other animals, they instantly denote badness in the public's eye. Thus they have been (and still are) the target of many grotesque assaults . . . and thus their numbers have been reduced everywhere.

Hunters take the natural niche of predators in Nature's scheme. They only remove a surplus that would have been taken by other predators, or, in their absence, disease, starvation or other natural controls.

HUNTERS — CONSERVATIONISTS

Besides filling a place in Mother Nature's overall plan, hunters continually strive to protect and enhance the resource they use. Throughout history, hunters have taken a traditional first step in conservation. John James Audubon, Theodore Roosevelt and Aldo Leopold are all famous conservationists. However, it's not well known that they were also all hunters.

Hunters ask for regulations to insure that their sport doesn't harm wildlife or any other natural resource. They lobby for valuable environmental legislation, fight pollution and the indiscriminate use of pesticides and gladly accept taxes on themselves to be used for land acquisition, wildlife management, research and hunter safety.

They form popular conservation organizations such as the Izaak Walton League of America, Ducks Unlimited, National Wildlife Federation, World Wildlife Fund and the Wildlife Society. Members of these groups invariably bloody themselves on the front line of environmental battles such as the fights against DDT, channelization, pollution and oil spillage.

EDITOR'S NOTE: William A. Schneider joined the Fish and Game Department's Information and Education Division in March, 1970. After working on various department publications, he was named editor of the new MONTANA OUTDOORS magazine in September, 1970. He was graduated from South Dakota State University, Brookings, in 1969 with a major in wildlife management and a minor in journalism.

While hunters and nonhunters bicker, the real problems threatening wildlife get worse and worse.

During 1970, hunters and fishermen (often the same people) paid $250 million through license fees and taxes on their sporting equipment, all of which was used for fish and wildlife restoration.

All this points out a fact which anti-hunting interests sometimes try to ignore. *Hunters are and always will be conservationists.*

To prove that hunters enhance rather than endanger wildlife, the U.S. Department of the Interior has released this good news: 11 western states had more deer, elk and antelope in 1970 than in any year since the turn of the century. Since 1900, deer numbers have increased 30 times —from 500,000 to 16 million—on a national scale. These facts may bury a few doubtful thoughts of the nonhunter devoted to the "all wildlife is scarce" doctrine.

Of even more interest to nonhunters is the fact that much of the hunter's conservation effort goes directly and indirectly to help non-game species (e.g. songbirds, furbearers, reptiles, shore birds). Game ranges acquired by the department, national wildlife refuges managed by the Interior Department and marshes purchased by Ducks Unlimited give life to thousands of species, not just deer and ducks. Money spent for habitat improvement also aids nonhunted wildlife. What is habitat for ducks is also habitat for marsh wrens and muskrats.

What seems ironic about the entire hunter-nonhunter conflict is that both groups are striving to obtain the same goal — the preservation of wildlife. Whether a person chooses to hunt or not to hunt is his or her own personal decision. It shouldn't become a national issue, especially since both groups can exist congruently.

While the energy and resources of anti-hunters are directed towards hunters—and hunters must use theirs in defense—the real problems worsen. Why should hunters be attacked for trying to save wildlife that is rapidly losing ground to pollution, land abuse and diminishing habitat? If both groups freely turn their guns on the real problems facing wildlife (e.g. habitat destruction), the progress toward conservation would grow like moose's antlers. The end result is obvious—larger wildlife populations to be enjoyed by everyone.

EVERYONE'S TALKING ABOUT

ACCESS

by Robert Rothweiler

INCREASED mobility of a motoring public, a higher standard of living and an expanding population have created a greater demand for outdoor recreation in recent years.

Hunting and fishing, along with the accompanying camping and picnicking, are major outdoor activities in Montana. In 1969 more than 219,000 Montanans and 90,000 nonresidents bought licenses to hunt or fish. Last year this total increased to more than 226,000 residents and 101,000 nonresidents. Since the physical area of Montana does not change as human populations increase, land managers must expect ever-growing demands on the land; yet they must still attempt to retain the characteristics that make it desirable for quality hunting and fishing.

In more populous states the demands for outdoor recreation exceed the area and facilities available. Montana still retains her wide open spaces, her fishing streams and her abundance of wildlife. However, those open spaces are rapidly filling up. As in other western states, large corporations involved in livestock and recreation have moved into Montana. The property they own is often adjacent to large acreages of public lands, and thus they control access to many of these lands.

How much area is open to sportsmen in Montana, and where are these areas located? The state is divided into three parts—public land, state land and private land.

PUBLIC LAND

The U.S. government owns 36 per cent of the total area of Montana, or 35.5 million acres. U.S. Forest Service lands constitute about half of this area — 16.6 million acres in 11 national forests located mainly in western and southern Montana. The Bureau of Land Management controls about 6.7 million acres scattered throughout Montana, mostly interspersed with private lands. These two agencies manage the lands under their jurisdiction for multiple use, including wildlife and recreation.

The location of public lands becomes a problem when they lie beyond private lands and access is not available to hunters and fishermen. This situation occurs mainly with lands administered by the Bureau of Land Management. Large expanses of public domain are available, but because of lack of access, fragmentary land patterns and lack of general knowledge of their existence and location, their use is severely hampered.

Outdoor recreationists have better access to U.S. Forest Service land. It lies in large blocks and generally access is available via administrative and logging roads.

Where large expanses of public lands are unavailable, sportsmen's groups have pressed government agencies to acquire access. The need for access was studied by the Public Land Law Review Commission, which recommended that, "Congress should authorize a program for acquiring and developing reasonable rights-of-way across private lands to provide a more extensive system of access for outdoor recreation and other uses of the public lands."

EDITOR'S NOTE: Robert A. Rothweiler, 41, is the department District Information Officer in Missoula. He received a Bachelor of Science degree in fish and wildlife management from the University of Montana, Missoula, in 1957 and a Master of Science degree in the same field from Montana State University, Bozeman, in 1960.

The U.S. Forest Service and the Bureau of Land Management are attempting to purchase easements for access to areas located beyond private land, and both agencies have the power of condemnation but are reluctant to use it. Sportsmen's groups urge that stronger programs be adopted by land management agencies for acquiring access.

The U.S. Fish and Wildlife Service manages 465,000 acres. With the exception of the Charles M. Russell National Wildlife Range surrounding Fort Peck Reservoir, lands administered by the U.S. Fish and Wildlife Service are wildlife refuges with restricted hunting and fishing.

The Bureau of Reclamation manages 305,000 acres, mostly as reservoirs and water areas. The National Park Service administers more than 1.1 million acres, almost all of them located in Glacier and Yellowstone Parks. The Bureau of Indian Affairs controls or holds in trust 5.8 million acres. On lands controlled by the latter two agencies, hunting and fishing is prohibited or severely restricted.

The Montana Fish and Game Commission is authorized to purchase land for access and for the maintenance of wildlife habitat. The most recent purchases, such as the Beartooth Game Range north of Helena, provide access to larger areas of public lands.

STATE LANDS

The Enabling Act of 1889 provided the State of Montana with selected lands for the purpose of establishing and maintaining a system of public schools. Two sections of each township were granted to the state for the maintenance of schools and other state institutions. The original grants consisted of 5.9 million acres. Other states receiving similar amounts of land sold theirs, but for various reasons Montana has retained most of this land. Presently, 4.6 million acres of land scattered throughout the state are administered by the State Board of Land and Investments.

The Montana legislature has defined the powers and duties of the State Land Board. A 1927 definition states, " . . . the guiding rule and principle shall be that these lands and funds are held in trust for the support of education and for the attainment of other worthy objectives helpful to the well-being of the people of the state."

The legislature also established the seven state forests and prohibited the sale of state lands classified as timber lands. These lands are administered by the State Forester's office and are open to hunting and fishing.

Scattered agricultural and grazing lands (owned by the state) employ a form of modified custodianship. The state leases the land to private operators with certain restraints and conditions; the lessee manages the land in conjunction with the management of his own lands. Use of these lands ranges from poor to excellent, depending on the lessee's interest and knowledge of proper management practices. He also controls access to these lands for the purposes of hunting and fishing.

Many people feel that it is preposterous to have state-owned lands, which the public supposedly possesses, closed to public use—especially to hunting. They feel that recreational use of the land is the "worthy objective helpful to the well-being of the people" mentioned in the 1927 law.

In 1967 Governor Babcock appointed a state land use committee, composed of heads of state agencies and representatives of landowners' and sportsmen's groups. Much of its time was spent determining the effects of recreational use on these

In some locations, lack of access seriously threatens outdoor recreation. Fortunately, many private landowners realize that the majority of outdoor recreationists are considerate and courteous in their activities. Signs like this one result from the actions of a few thoughtless individuals who litter, destroy private property or in any other way show disrespect for land.
(F&G photo by Bill Schneider)

lands. Some of the questions confronting the committee were, "Can lands held in trust for the support of education be used either on a fee or free basis for public outdoor recreation? How should potential damages, such as fire, litter and vandalism caused by outdoor recreationists, be prevented or controlled? How should conflicts between sportsmen and lessees be resolved?"

The basic conclusion reached was that diversified use of state land, including recreational use, will become both practical and feasible only when the state of Montana assumes a direct obligation in the management and protection of these lands. Additional emphasis should be directed toward outdoor recreational land management that encourages proper and reasonable use of all lands. The committee also recommended that enforcement be expanded to include laws regulating litter, vandalism and fire on state lands. Subsequent legislation enables Montana game wardens to enforce such laws.

PRIVATE LAND

Hunters in Montana must obtain permission to hunt big game on private land. Nobody likes to ask to hunt on another man's land — it is like asking to borrow his gun or his car. Still, the recreationist gets all the benefits and the landowner receives nothing but worry.

Permission to use private land is a privilege that must be earned. The landowner wants and deserves to know if the hunter intends to take and give nothing in return; if he can be trusted with fire; if he will respect property and if he is proficient and capable in his sport.

Few hunters take the time to get to know the landowner. Instead they seek permission at the last moment, often with gun in hand and motor running on their way into his fields. Many sportsmen complain that "No hunting" and "No trespassing" signs are increasing. Often these signs mean "Let's get acquainted before you use this land." The wildlife belongs to the public but the land still belongs to the landowner. Hunting on this land is a privilege, not a right.

TOO MUCH ACCESS

Although lack of access can certainly be a serious problem, unlimited access is a solution that can create its own problems. One of these is overuse of the hunting area and reduced hunter success. Aldo Leopold recognized the situation as early as 1937: " . . . we are faced with the self-defeating nature of mass use of our outdoor resources. The cycle is too familiar — a gain in quantity often results in a loss of quality."

During the late 1950's and early 1960's large game herds overused many of their ranges in Montana. One solution to this overuse was to increase hunter access in order to reduce game populations. In the last 10 years remote areas in western Montana have been opened by logging roads, a situation that has affected big game hunting. In the Bitterroot, hunter success has diminished because of increased access (based on hunter harvest reports before and after road building). Shortened seasons result from more hunters entering formerly remote areas.

A similar situation exists in the South Fork of the Flathead. This area has long been regarded as one of the best elk hunting areas in Montana. Up to the late 1950's outfitter activities centered around Spotted Bear Ranger Station. Here pack strings moved south into the wilderness areas. In the 1960's road construction began in the Spotted Bear area, and now roads extend south and east beyond Spotted Bear toward the Bob Marshall Wilderness. These systems allow vehicle travel to reach points much nearer the wilderness and they provide extensive access to deer and elk areas. In the last few years an increase in elk harvest reflects this. The future, however, may find hunters having less success with diminished elk herds.

Game biologists and other interested people are studying the effects of increased access on the wilderness wildlife species. The Montana Fish and Game Department and the U.S. Forest Service are engaged in a study to determine effects of logging and logging roads on elk.

It has become increasingly evident that wildlife needs must be considered in any schemes for the varied uses of land, including the opening up of land to access. Quality in outdoor recreation is not assured merely by provision of access — all implications must be taken into consideration. Our national traditions hold that outdoor recreation is free, a right and heritage, and that it should be available in undiminished *quality* for all who seek it.

NEXT TIME

Watch for these features in the March/April 1972 issue.

. . . the wolverine
. . . slash burning
. . . spring bear hunting
. . . dams and man
. . . mining and the environment
. . . Bannack State Monument
. . . the Beartooth Primitive Area
. . . the sportsman's license

The Other Half

. . . A Woman's Look at Conservation by Louise Fenner

SOMETHING FOR THE COOK

The recipe for rose hip jelly in our September/October issue prompted Mrs. Ginny Rose of Nashua, Mont., to write:

"It is true, as you say, that rose hips are best in late summer and early fall, but they can be used all year round. Last winter I made some syrup out of the dried hips. The leaves and petals of the wild rose plant also make an excellent and very fragrant tea. I've read that three rose hips contain as much Vitamin C as an orange and the seeds are rich in Vitamin E, so it is nice to gather them in the winter when fresh fruit is hard to come by. Europeans often crush them and make a fine dry powder which they add to soups, cereals and hot and cold drinks."

It seems these little seed pods have been badly underrated.

ELK SWISS STEAK

Mrs. Pat La Salle of Helena, Mont., gave us one of her favorite recipes:

"Slice elk or deer round steak into pieces about three inches round — or for a variation you can slice it into thin strips as for beef stroganoff. Pound the meat, removing all fat and gristle, and flour it. Season and brown it in hot fat.

"Remove meat from pan and make gravy using the drippings, flour and water. If the gravy isn't brown enough you can add color with Kitchen Bouquet or a broth made out of burnt sugar and water. (Use about 2 tbsp. sugar, burned till brown, and 2-4 tbsp. water. Don't use too much of this broth or the gravy will taste bitter).

"Add 1 can tomatoes or several ripe tomatoes chopped up; one or two white onions sliced into rings; and chopped green pepper. Sometimes I add canned mushrooms, dry mushroom or mushroom - beef soup mix, or canned golden mushroom soup. When the gravy is fairly thick, return the meat to the pan, cover and cook in the oven for about 2½ hours at 250 or 275 degrees. You can also cook it for about an hour at 350 degrees, but I think the first method gives better flavor."

YOU SHOT WHAT?

The long-skirted ladies of the early 1900's sometimes showed their menfolk a thing or two about hunting. The department's first biennial report, dated 1900-1902, mentions two lady hunters:

"Only a few days ago Miss Josie Talbott, a young society lady of Columbia Falls, killed a deer on the river bank in front of their beautiful residence. Mrs. G. H. Stoiber of Silverton, Colorado, while on a hunt this last October, killed a fine bull elk and two brown bears, one a very large specimen. This lady also enjoys the distinction of being the first woman to take out a nonresident hunter's license in this state."

By the way, there are now nearly one million women hunters in the United States, according to the National Shooting Sports Foundation. That's one for every 16 men.

IDEA WINS AWARD

Can city dogs enjoy all the comforts of home while visiting Montana? "Sure," says Peggy Reynolds of Whitehall, all around gal for the Recreation and Parks Division. She designed a "canine comfort station" for Lewis and Clark State Parks. It consists of an authentic, full-sized red fire hydrant where dogs are free to do their thing.

This all may sound very funny, but it won Mrs. Reynolds an award of $50 from the National Recreation and Parks Association. I'd say her idea turned out pretty well.

Peggy Reynolds at work on a state park sign.

SOMETIMES WE WIN

Just to make you feel better today, I'd like to quote this article from CONSERVATION NEWS:

"A mother and son have received a $12,000 bounty from the federal government for taking action when they saw a concrete company dumping washings from its mixing trucks in the East River.

"Reports from Gwen Zeichner and her son Steven, 17, enabled the U.S. Army Corps of Engineers to take movies that led to the company being indicted for polluting the river last Oct. 14. The firm pleaded guilty and was fined $25,000 by U.S. District Court Judge Inzer B. Wyatt who directed that half of the amount go to the Zeichers under a proviso of the 1899 Refuse Act."

—Associated Press

THE CATCHALL

by Bill Schneider

Colorado magazine sued

COLORADO, a commercial magazine published in Denver, has big trouble.

In its July/August issue, the publication had a lead story entitled, "They're Poisoning Your Wildlife." In the article the editors painted a vivid picture of predator control in the western states.

After publication, waves of reaction came from all directions. Many praised the magazine for its bold editorial intentions and promised to do whatever they could to stop the killing.

However, a prominent sheep rancher from Casper, Wyo., disagreed with the applauding readers and sued the magazine for $2.5 million. Mr. Joseph Burke filed the libel suit on the grounds that the magazine implied he was "willfully, wantonly and maliciously" poisoning bald eagles.

After reading the article in question, I must agree that it was very critical of the use of predator poisons for animal control. Whether or not it contained "malicious" implications must, however, be decided by a court of law.

BOYCOTT

The U. S. House of Representatives has passed a bill that authorizes a boycott of products from countries that persist in exploiting Atlantic Salmon on the high seas.

SUBSCRIPTIONS

Get your subscription to MONTANA OUTDOORS by sending your name, address and zip code to MONTANA OUTDOORS, Fish and Game Department, Helena, MT 59601.

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Make all checks and money orders payable to the Montana Fish and Game Department.

EQ INDEX

The "Third Index of Environmental Quality," just published by the National Wildlife Federation, has little encouraging news. The federation says that the air quality index is still losing but at a slower rate than last year, water has leveled off but not enough, minerals are being depleted at a faster rate, soil is disappearing at about the same rate and wildlife at a slightly faster rate. Only one of the major categories, the timber "EQ" index, improved since last year.

Reprints of the index can be obtained free of charge from: Educational Services, National Wildlife Federation, 1412 16th St. N.W., Washington, D.C. 20036.

ON THE ROAD

The hunter's chances of meeting his death are 67 times greater on the road than in the field, according to 1970 National Safety Council figures just released. The figures also reveal that public firearms fatalities dropped an impressive 10 per cent from 1969. That improvement isn't equaled in any other public accident category.

EASTERN LION

It appears that the mountain lion may be strictly a western species in the near future.

The eastern lion, now very rare, stands to lose its last bit of wild habitat, says the Wildlife Management Institute. The New Brunswick (Canada) area, thought to be the last breeding area of the eastern cougar, is presently logged very heavily and is threatened by a proposed highway. New Brunswick game officials feel that the lion can probably survive the timber-cutting but that it will certainly be lost unless the highway is routed around the area.

HOW BAD CAN POLLUTION GET?

The Environmental Protection Agency has warned people not to "touch" the water in the Potomac River or two of its tributaries—Rock Creek and the Anacostia River.

NEW BOOK

The department's game management division recently released a book entitled *Game Management in Montana.*

The colorful, 238-page book contains the history of game management in Montana, stories and pictures on every game species, historical records of the progress of management and lots of factual information on management in general and on each game species.

If you are interested in what is happening (and what has happened) to our game populations, this book is for you. Copies are available free-of-charge by writing to the Fish and Game Department in Helena or stopping at any district Fish and Game office.

ARCHERY TAX

Congressmen George A. Gooding (R.-Pa.) and John D. Dingell (D-Mich.) have introduced a bill that would place a manufacturer's excise tax on archery gear and equipment used for hunting. As with similar taxes on rifles, shotguns, handguns and fishing equipment, revenue from this tax will be set aside for wildlife restoration and management.

According to the Wildlife Management Institute, the bill is strongly backed by bowhunters —who, of course, are the people who will be paying the tax. The archery industry has also offered strong support.

The bowhunters' willingness to pay this tax in the name of conservation is just one more example of how hunters strive for a higher quality environment for wildlife and man.

BIRDS OF PREY PROTECTED

The Bureau of Land Management has named a 30-mile stretch of the scenic Snake River in southwest Idaho the Snake River Birds of Prey Natural Area. This section contains large concentrations of golden eagles and prairie falcons.

The Bureau should be congratulated for its interest in these often-persecuted birds of prey.

QUOTE

" . . . perhaps the hunter is the greatest friend of animals hunted, not excepting the Humane Society."

—Henry David Thoreau

wildlife shorts

The mountain lion has the largest range of any animal in the western hemisphere.

* * *

Electric eels can produce more electrical energy per ounce than any battery man has yet devised.

* * *

Man outlives all his fellow mammals. His closest rival on record is an elephant that lived 69 years.

* * *

All spiders are venomous, but the poison in most species is harmless to man.

* * *

Shrews, the smallest meat-eating mammals, burn energy so fast that they starve quickly without a steady food supply. Their food consumption can be compared to a 175-pound man eating 175 pounds of meat each day.

* * *

A dragonfly nymph has been known to eat mosquito wigglers at a rate of 20 per minute.

* * *

The fisher does not fish. It's a nimble tree-climber and feeds mainly on squirrels.

* * *

Rodents gnaw on antlers shed by members of the deer family in order to satisfy their need for calcium and other minerals.

A porcupine has approximately 30,000 quills.

* * *

A rattlesnake can sense temperature differences as small as .001° centigrade through its facial pits.

* * *

The age of most fish can be determined by counting the growth rings on their scales.

* * *

A prairie dog gets its name from a shrill "bark" that it sounds when alarmed.

* * *

The whooping crane is the tallest North American bird.

* * *

A snapping turtle can't swallow unless its head is submerged.

* * *

THE GOLDEN EAGLE

The Regal One

the champion of the western skies and a priceless piece of national heritage

by Kenneth Walcheck

I REMEMBER that day in unforgettable, immediate terms. My memory brings back the sensation of my nerve endings as I rappelled down the face of a sandstone cliff in the Missouri River Breaks to photograph a golden eaglet in its nest. It was feeding on a bull snake. Such a remembrance numbs the mind's conscious part, the part that wants to understand as well as sense. It cannot explain why the sight of an eagle should send such pleasure surging through one's arteries.

To describe the golden eagle, no word is more proper than "regal." Champion of the skies, the eagle was once the symbol of the power of Rome, and its image was placed on the battle staffs carried in front of every Roman legion. The Romans called it Aquila, the generic name it bears today. When falconry flourished in Europe, the privileged charter of flying the golden eagle was traditionally reserved for emperors and kings.

This majestic bird is today fighting for its very existence. For almost two decades, the number of golden eagles has shown a steady decline as advancing civilization, illegal shootings, habitat destruction and predator poisons all take their toll. Dr. Walter R. Spofford of the State University of New York at Syracuse, nationally known authority on the golden eagle, estimates that fewer than 10,000 of these raptors (birds of prey) remain in North America.

Although the decline of the species has been well documented in the past few years, the first revision (1968) of *Rare and Endangered Fish and Wildlife of the United States,* compiled by a special committee for the U.S. Bureau of Sport Fisheries and Wildlife, fails to list the golden eagle as either rare or endangered. At the same time, however, several other species of birds with breeding populations of approximately the same number are listed as "rare."

Man's alteration of the environment has a great effect on

Called "the winged wolf" by the Aztecs, the golden eagle still rules the western skies with the unchallenged power of a king. Only man can threaten the regal one. (The illustration is from a transparency taken by Alan Nelson of a display in the Denver Museum of Natural History.)

the quality and quantity of wildlife. It is a well documented fact that 20 species of animals that once lived on this continent are now extinct. The loss of these creatures is not so alarming when one is aware that the process of extinction of species was going on long before man existed. It is, however, alarming to know that man is helping eliminate species faster than they are being created by evolutionary processes.

HABITS AND HABITAT

What kind of creature is this bird that glides nearer and nearer to extinction? Many avian authorities consider the golden eagle a far nobler bird than the bald eagle. The latter was chosen as the national emblem chiefly because its range is confined to North America. The golden eagle, however, resides in the entire northern hemisphere and so cannot be considered a strictly "American" bird.

Six races of the golden eagle have been described in various regions of Europe and Asia in addition to our North American form. Today, the golden eagle population is concentrated in the western part of the United States and Canada. In the eastern United States, persistent persecution has reduced it to virtual extinction.

From wingtip to wingtip the golden eagle spans six to eight feet, and it generally has an overall length of 30 to 40 inches. As with other birds of prey, females are larger than males. An adult male weighs approximately nine pounds and the female 12 pounds.

The golden eagle gets its name from a wash of golden hackles on the nape of the neck, which can sometimes be observed when it turns in the air. The adult is almost uniformly dark brown. The immature eagle differs by having a white tail with a dark terminal band and by showing a white patch on top and bottom at the base of the primaries on the wings. Adult plumage is not complete until the bird is four years old or more.

At a distance it is almost impossible to distinguish the golden

eagle from the bald, especially when the latter is in immature plumage. One characteristic that differentiates the two species is that the lower one-third of the golden eagle's legs are feathered, while the legs of the bald eagle are bare.

Golden eagles mate for life. Where good habitat is available, a nesting pair will claim and defend a territory of from 25 to 100 square miles. Where there is crowding because of lack of suitable habitat, a pair will settle for a smaller territory, perhaps 15 to 20 square miles. Golden eagles are reported to have a life span of 30 years or more and the lack of natural predators once enabled the species to keep its population stable by successfully rearing only one eaglet every two or three years. This stability has been lost, however, because of man's interference.

During courtship the golden eagle puts on a fantastic display of aerial acrobatics. It consists of spectacular flight maneuvers, spiral sailings in ever-rising circles in which there is a brushing of wing tips and occasional sideslippings broken off by a spectacular series of loops and rolls.

Once the courtship is over, nest construction begins. The bulky nest has an outside diameter of as much as five to six feet and is constructed chiefly of large sticks, twigs and other coarse materials. Most often it is built on the side of a cliff or high tree. Golden eagles generally return to the same nest each year, gradually enlarging it as they mend damage incurred during their absence. In time their home becomes enormous and after a period of years may weigh a ton or more.

Breeding does not occur until the third to fifth year, and the annual clutch of eggs is commonly just two. Even under the best of circumstances this precludes any significant expansion of the eagle population. It often happens that one in a pair of eagle eggs is infertile. But more often one of the eaglets disappears; the smaller and weaker bird may not be able to secure its share of the food and thus may weaken and die from exposure. Sometimes a larger female will attack and kill a male.

At 10 weeks the juvenile plumage is practically complete and the eaglet is ready to fly. During this period of development food is brought to the nest by both parents, but chiefly by the male. The female does practically all the feeding until the eaglet is strong enough to feed itself. Because of the long period of development in the nest and care from model parents, the eagle may be better equipped for survival than any other North American bird.

The white-tailed jackrabbit, which often competes with livestock for forage, makes up a large part of the golden eagle's bill of fare. (F&G photo by Gus Wolfe)

EDITOR'S NOTE—Kenneth C. Walcheck, former assistant professor of biology at Northern Montana College in Havre, recently became the department's District Information Officer in Miles City. He has written numerous articles on environmental topics and has published several technical papers in the area of ornithology. He recently completed a field study project in the Missouri River Breaks on the ecological effects of chemical sagebrush control on nesting bird populations. Walcheck, 40, received Bachelor of Science degrees in biology and wildlife conservation from Wisconsin State University, Stevens Point, in 1959, and a Master of Science degree in applied science (ecology) from Montana State University, Bozeman, in 1964.

A PERSECUTED PREDATOR

The golden eagle's skill as a predator has, ironically, contributed to the bird's decline by earning it a "livestock killer" reputation. It was widely persecuted by ranchers in the past and it can still be killed in order to "protect" flocks or herds.

Conservationists have made Congress aware of the fact that the golden eagle population is declining at an alarming rate. The Bald Eagle Act of 1940 was revised in 1962 (P.L. 87-884) to include the golden eagle as a protected species. However, the law contains this exception:

"Provided, that on request of the Governor of any State, the Secretary of the Interior shall authorize the taking of golden eagles for the purpose of seasonally protecting domesticated flocks and herds . . . in such part or parts of such States and for such periods as the Secretary determines to be necessary to protect such interests."

A THREE-WAY COLLISION

This "exception" is projecting the golden eagle, environmentalists and livestock interests in the western states into a three-way collision course, the outcome of which will ultimately have to be decided by Congress.

The dilemma of the situation is this — ranchers, especially sheepmen, claim that golden eagles prey heavily upon livestock, young lambs in particular, and that they must at least be allowed to kill eagles seasonally to protect their investment.

Environmentalists, on the other hand, maintain that aesthetic and rodent control benefits far offset the eagle's detrimental effect on the livestock industry, and thus the bird should receive full protection under the law.

Knowledge of the feeding habits of the golden eagle is important in determining whether or not ranchers are justified in killing golden eagles to protect livestock. A well-documented study of the golden eagle in Montana, encompassing a 1,260-square-mile area north of Yellowstone National Park, was made recently by Jerry McGahan, then a University of Montana graduate student in zoology. The research area supports 30,000 sheep and can be considered the center of Montana's breeder-calf industry. In this study, which covered four summers (1962-1965), McGahan identified the remains of 980 prey animals from 38 aeries (eagle nests). He found:

White - tailed jackrabbits made up about 37 per cent of the birds' bill of fare, with desert and mountain cottontails furnishing another third. Various species of birds accounted for an additional 12 per cent. The remaining 18 per cent, though diversified, showed that domesticated sheep were very rarely the eagles' victims. Thirty-two

THE GOLDEN EAGLE

Classification: Order - Falconiformes
Family - Accipitridae
Genus - *Aquila*
Species - *chrysaetos*

Status: Population numbers showing a steady decline.

Characteristics: Flat-winged gliding and soaring bird that holds broad wings horizontally; wing beats are quicker and more vigorous than those of the bald eagle.

Adult: large dark-colored bird with no white showing anywhere. In favorable lights at short range, golden hackles on nape are visible. About 30-41 inches in length with wing spread of 6⅓-7⅔ feet.

Immature: white patch at base of primaries; conspicuous white on base of tail.

Estimated Numbers: Less than 10,000 in North America.

Reason for Decline: Elimination of habitat, illegal shootings and predator control campaigns.

Protective Measures: Complete protection. Promotion of a greater public awareness of the present status of the golden eagle through federal and state educational programs. Immediate and more extensive evaluation of predator poisoning programs. More investigation of the ecological value of the bird's predatory habits.

different species of prey, ranging from young deer to ground squirrels and from great horned owls to rattlesnakes, succumbed to the eagles' appetite. In an area producing 18,000 lambs a year, the remains of only two lambs were found in nests, and these could have been carrion.

There was no evidence of any predation of sheep or other domestic stock in the study area itself.

WEIGHT-LIFTING ABILITY

One damaging misconception about eagles is that a single bird can carry a lamb. Scientists are aware that a full-grown eagle, which weighs about 10 pounds, cannot carry a weight heavier than itself. In some species of sheep a healthy young lamb weighs about 12 pounds; in other species a lamb will weigh eight to 10 pounds when it first leaves its mother's side and becomes less protected and more exposed to predation.

In the book, *The American Eagles and Their Economic Status*, published in 1964 by the U. S. Department of Interior, Lee W. Arnold presents this data on the weight-lifting capabilities of golden eagles:

Walker and Walker (1940) conducted experiments with a captive bird in good condition in southern California. When released from a platform about 15 feet from the ground, the eagle, with a weight of eight pounds attached, beat the air wildly and was able to fly only 10 to 14 yards before coming down to earth.

During the spring of 1937, C. C. Sperry tested the weight-lifting ability of a captive eagle in Texas. He did this by fastening weights to its feet and then releasing it. The 11-pound bird with which he experimented could not raise itself from the ground with a 5¼-pound weight attached to its feet.

Despite the mounting scientific evidence which documents the fact that the golden eagle constitutes no significant threat to livestock, ranchers persist in believing otherwise. A report from the USDA Federal-State Crop Reporting Service in April estimated that 8,400 lambs and 200 sheep were taken by eagles in Wyoming in 1970. In Montana, the USDA's Crop and Livestock Reporting Service claimed that 9,000 sheep and lambs were lost to eagles in 1969 and 17,000 the year before.

EAGLE KILLS

Legal control methods are only part of the golden eagle's problems. Many cases of grossly illegal shooting of both bald and golden eagles have recently been made public. In 1971 a Wyoming helicopter pilot named James Vogan testified before a Senate subcommittee that at least 565 bald and golden eagles were shot in Wyoming in seven months. In summer of 1971 he said, "We had a regular haystack of these eagles when we first started bringing them in — and nothing was done about it." The credibility of Vogan's testimony is yet to be verified, but the fact that illegal shootings do occur is unquestionable.

Another possible—but still unverified—factor in the golden eagle's decline is the widespread use of hard pesticides. The dangers of these pesticides to certain avian species such as the bald eagle and the peregrine falcon have been well documented (see MONTANA OUTDOORS March/April 1971 issue), but such evidence for the golden eagle is generally lacking. Biologists know that pesticides have killed captive golden eagles, but evidence from field studies has been difficult to obtain. The residues of DDT in golden eagles are considerably lower than those in bald eagles. This may reflect the difference in food habits of the two species: the bald eagle diet consists mainly of fish, which particularly tend to collect pesticide residue in their fatty tissues, while the golden eagle diet consists of small animals.

The latest threat to eagles has been the indiscriminate use of predator poisons. Some 23 eagles were found dead from thallium sulfate poisoning in Wyoming last May.

Senator Gale McGee, D-Wyo., raised a rather provocative question as to "why a toxic agent whose use was circumscribed by federal agencies years ago, at least in part because of the danger its presence causes to humans, remains in use?" Senator McGee said thallium was pulled off the market in 1965 as a domestic pest and rodent control agent and federal agencies discontinued its use in 1967. But, he said, "This highly toxic substance (thallium produces symptoms resembling lead poisoning) remains available to state and governmental predator and pest control programs."

If valid evidence of eagle predation could be documented, a justification might exist for keeping the eagle population at a controlled level through a humane, scientific and carefully planned eagle depredation program. Ample evidence does exist, however, concerning the tremendous importance of predators in Nature's scheme of checks and balances. Much more needs to be known before man brashly interrups that scheme for his own highly questionable purposes.

Our elected officials and appointed administrators of governmental agencies on both the state and national level must be encouraged to stop those who have a heedless disregard for the golden eagle. This magnificent bird is a priceless part of our national heritage and is certainly deserving of all the protection and consideration modern man can give it.

After approximately 35 days of incubation, eaglets crack their way out of shells with the help of an "egg tooth." Fluffy white down covers the chicks within five days. (F&G photo by Gus Wolfe)

At two weeks, the eaglets lose their down. (F&G photo by Gus Wolfe)

By the time eaglets reach five weeks, parents must hunt frantically to keep their brood fed. The nest contains several Richardson ground squirrels, a common prey of golden eagles. (F&G photo by Gus Wolfe)

At four months, the golden eagle already has the majestic and awe-inspiring look unique to its species. Its immature plumage is retained until the bird matures at four or five years. (F&G photo by Gus Wolfe)

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The Lincoln-Scapegoat Country

A place where man is always just a visitor

by bob cooney

Lincoln-Scapegoat country of ern Montana is a region of great nd variety, from the friendly hills and small scenic mountain the remote grandeur of Scape- untain. Because it is accessible trail, this land is still relatively d by man. Deer and elk, goats ntain sheep, black bear and the zzly live harmoniously in the of this lovely place.

ite of these 240,500 acres of d has concerned many conser- inded individuals and groups t years, not only in Montana ughout the nation. The prob- in the designation of this re- ich lies north of the community n. Several commercial interests nted the area opened to multiple lopment, while conservationists od fast for a wilderness classi- The final decision, which may on, will determine whether this ains its unique wild character t forever.

HISTORY

before the coming of the white ians living west of the Conti- vide skirted the southern edge incoln-Scapegoat area in their the prairies. They knew this "the trail to the buffalo." Cap- is on the homeward journey of s and Clark Expedition took ad- of this same trail.

settlers in the upper Blackfoot liscovered good hunting and fishing deep in this mountain country. They were frequently joined by friends from nearby communities and word soon spread of these pleasant back country trips.

The completion of the Rogers Pass highway between Missoula and Great Falls in the mid-1950's brought a rapid increase in visitors. Some 20 outfitters now operate in the area. Many hunters and campers bring their own stock, and more and more outdoor people have found a special pleasure in backpacking into the region.

THE LINCOLN BACK COUNTRY

The first formal proposal for wilderness consideration in the early 1960's included only that portion of the Lincoln Ranger District that lies north of a line across the crest of Lone, Red and Arrastra Mountains. This had long been thought of as the Lincoln Back Country, some 75,000 acres in size.

It was soon decided, however, that the suggested wilderness should be enlarged to include not only the original upper Landers and East Forks of the Blackfoot, but also much of the headwaters of the North Fork of the Blackfoot. The entire Scapegoat Mountain complex was added, as well as portions of the Upper South Fork of the Sun River, Straight Creek and the upper Dearborn drainage east of the Continental Divide. The boundaries then extended north to the Bob Marshall Wilderness and nearly to Benchmark on the Sun River side. This area includes portions of three national forests—the Helena, the Lolo and the Lewis and Clark—and encompasses some 240,500 acres.

A wide variety of wilderness recreational opportunities has always characterized the Lincoln-Scapegoat area. The southern portion is ideal for easy family-type backpack and saddle horse trips. Small but beautiful mountain lakes and streams appeal to both campers and fishermen, and many people enjoy exploring the wooded areas and climbing reasonably easy trails to nearby mountain peaks.

The streams in the area are for the most part quite small and would not support more than the present light, trail-type fishing pressure. They do, however, provide ideal spawning waters and, most important, the undisturbed habitat necessary for the survival of the westslope cutthroat trout.

One of the most memorable climbs in the area takes the hiker to the top of Red Mountain, more than 9,000 feet in elevation. Near the crest above the timberline, vast beds of low-growing, brilliant alpine flowers present a striking picture in the early summer. Olson Peak, farther north, although somewhat more difficult to climb, is well worth the effort. From there an unforgettable view is afforded of massive Scapegoat Mountain in the very heart of the most remote section of the Lincoln-Scapegoat area.

EXPLORING SCAPEGOAT MOUNTAIN

Considerably more time and effort are needed to explore the remote region that surrounds Scapegoat. Many interesting trails lead to the area, and each one offers pleasant wilderness experiences.

k trip in the Lincoln-Scapegoat :apegoat Mountain highlights G photo by Bob Cooney)

Elk and deer are found throughout the entire area, while goats and occasionally mountain sheep can be seen in the higher elevations. Black bear are widely distributed, and there is always the chance for a glimpse of a grizzly.

It would be fun to think for a moment about Scapegoat, for it is magnificient. In a sense it is a mountain complex nearly eight miles in length along the Continental Divide and close to three miles wide. Great vertical limestone walls protect almost its entire circumference. Above these escarpments lies a vast subalpine plateau from which rise several mountain tops.

From Observation Point on the north end of the complex, one can look out across the vastness of the Bob Marshall Wilderness almost to Glacier Park. Near the south end, a pyramid-shaped mountain rises higher than the rest. This is the true top of Scapegoat, nearly 9,200 feet high.

For those who have had the thrill of exploring this remote mountain, there are many memories. Perhaps the most vivid of all might be the discovery of great sink holes in the limestone surface of the plateau. These are formed when the earth collapses above underground caverns that are formed by water eroding away the limestone. Some sink holes are partially filled with snow and ice, while others extend to unknown depths, as indicated by the slowly vanishing sound of a carefully tossed rock. A special memory exists for those who have ridden a horse across this strange, almost forbidding place and listened to the hollow drumming of its hooves and imagined the probable vastness of underground caverns.

EDITOR'S NOTE: A recipient of the 1957 American Motors Conservation Award, Bob Cooney, 62, has devoted most of his life to wilderness and wildlife management. He recently retired from the department after 31 years of service to become Director of the Wilderness Society's "Way to the Wilderness" trip program in Denver. Cooney has a Bachelor of Science degree in forestry from the University of Montana, Missoula. He joined the department in 1940 and has been both Chief of Game Management and Assistant Chief of Recreation and Parks. He has made numerous field studies of the Lincoln-Scapegoat area and has devoted much time to the study and preservation of America's endangered species. He is also an avid wildlife and wilderness photographer.

USE OF THE AREA

Up to the early 1960's it was taken pretty much for granted that this wild land would remain as it has always been—accessible only by trail, a place where man would always be just a visitor. Many persons were shocked to learn in 1963 of a proposal for multiple use development of the southern portion of this unique area. Roads and timber harvest were included in the plan.

Deeply concerned individuals and conservation groups conducted careful field studies and gained much information about the natural resources of the area. Public agencies, both federal and state, also carried out intensive investigations. Timber, although of prime importance for watershed protection, was not found to be generally of high economic value. Domestic grazing consisted of use by recreational pack and saddle stock. No significant evidence of minerals was found in the area.

Retention of the land's wild character was shown to be essential to the preservation of wildlife values. This appeared most important for the survival of a significant grizzly bear population and also the endangered westslope cutthroat trout. The high quality elk hunting that the area provided would be seriously downgraded by the presence of roads. The small but delightful mountain lakes were far too fragile to support a road access fishery. When these important findings were reviewed, a hold was placed on the plan for development.

The fact that outdoor recreation represented the area's highest value brought about a second proposal. This plan suggested a system of roads that would cross the area in order to make it more accessible to general recreation. Again, it was established that public sentiment strongly supported keeping the area's original trail access status.

STATE AND NATIONAL INTEREST

During all these years when alternatives were being studied, the Montana Congressional Delegation was actively working for the establishment of a wilderness classification under the National Wilderness Preservation Act. Since 1965, several bills have been introduced for this purpose, and a number of them are still awaiting decision. Senators and representatives of other states have also aided this effort.

The Montana Fish and Game Commission submitted a statement in 1968 expressing a deep interest in the area and approving its classification to wilderness.

The U. S. Forest Service, with responsibility for administration of the area, did not support wilderness designation. However, it announced in 1968 that no development or activity would be scheduled for the next several years pending public consideration of various management alternatives.

Meanwhile, a comprehensive resource inventory and analysis by the U.S. Forest Service indicates that the area has prime potential for dispersed recreation use — similar to that of the

past — and that while timber is present in commercial quantities, including some high value stands, harvest at this time would require road development that would detract from the area's "back country" type recreational potential. In December 1971 it was announced that the U.S. Forest Service, through the Department of Agriculture, has reported favorably on the pending wilderness legislation and is supporting wilderness classification for the area. Wilderness supporters are very encouraged by this report.

The Wilderness Society and Montana Wilderness Association, along with the Montana Wildlife Federation and other state and national conservation groups, have been extremely active in efforts to obtain wilderness classification.

SUMMARY

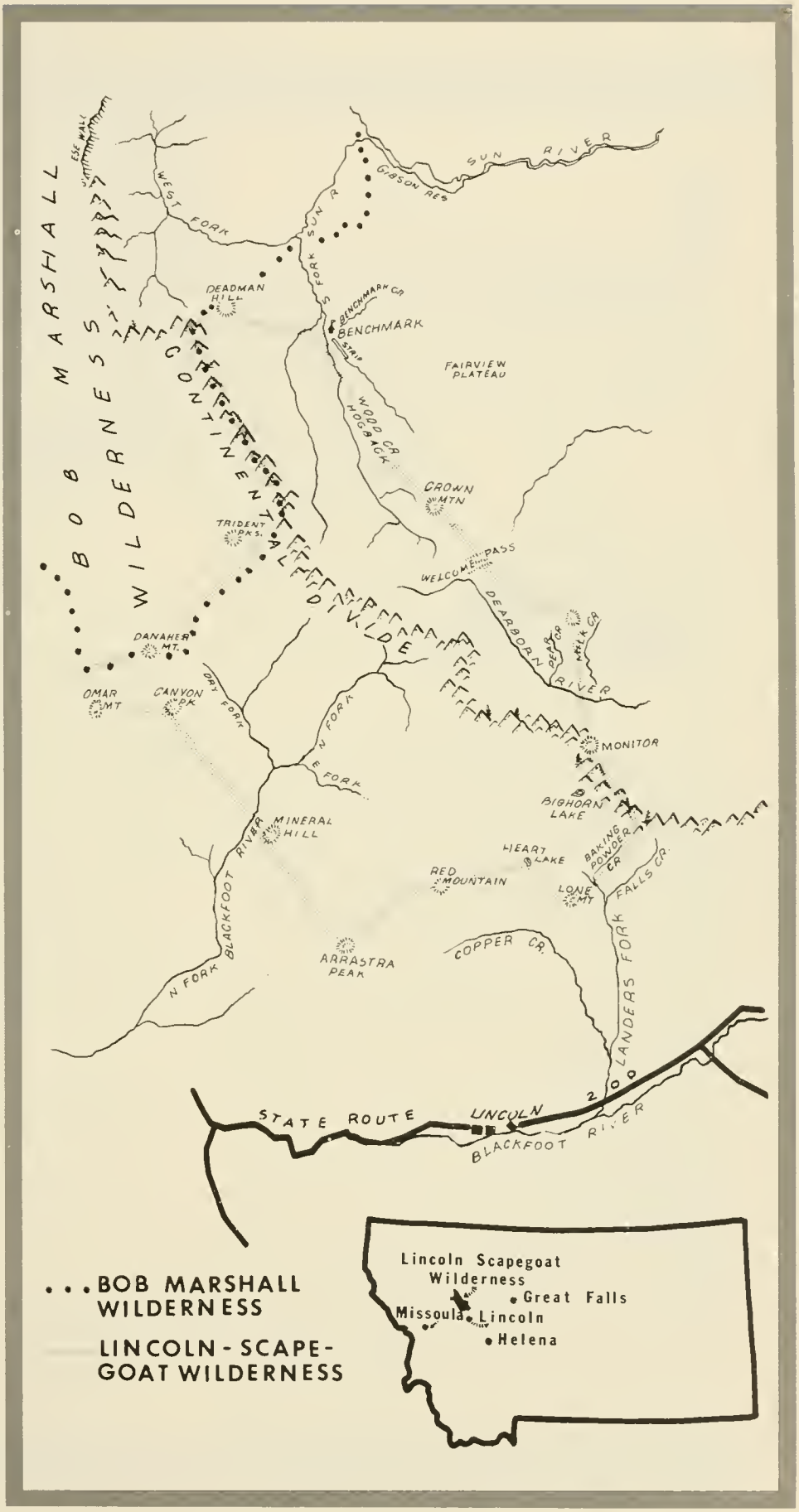
It has been possible to touch upon only the highlights of this vital land use consideration. Several points, however, stand out:

. . . The attention to the fragile nature of important resources including the soil as well as the lakes, streams and associated fishery;

. . . The realization of the vital ecological relationship between wilderness species of wildlife, including the grizzly and the westslope cutthroat trout, and the wild land environment upon which they depend;

. . . And finally, the deep feeling that although the public needs relatively easy access to many forms of outdoor recreation, there must be an overriding consideration for the preservation of carefully selected wild areas. For these there is no substitute, and for these time is rapidly running out . . .

It is most encouraging that the Lincoln-Scapegoat country is receiving this timely attention.



ELMO STATE RECREATION AREA

by Anthony Buechel

(F&G photo by Anthony Buechel)

ELMO State Recreation Area is a beautiful tract of land located 19 miles north of Polson on U. S. Highway 93. It is approximately 40 acres in size and claims about one-quarter mile of western Flathead Lake frontage. Here the public will find easy access to the lake's many seasonal recreation opportunities.

DEVELOPMENT

This new park was born in 1966 when the department acquired 37.14 acres by special resolution from the State Land Board for the purpose of promoting public recreation. A project was compiled and submitted to the Bureau of Outdoor Recreation for approval. Shortly thereafter, the contractor and his craftsmen began work and Elmo State Recreation Area was opened in the summer of 1971.

The area is denoted primarily by a small grove of native ponderosa pine and juniper located on a portion of its waterfront. Another mark of identification is a small rock outcropping surrounded by several smaller juniper trees.

The location is unique in that it is in a rather arid climate zone with low ranging mountains, rolling hills and slopes which gradually taper toward the shores of Flathead Lake. From the site visitors can enjoy the spectacular view of Big Arm Bay, a portion of Wildhorse Island and the Mission Mountain Range.

FACILITIES

Campers, picnickers and boaters will find plenty of facilities available to make their visit more enjoyable. Pull-out and back-in spaces can accommodate up to 30 campers, and many of these units are equipped with a sturdy picnic table, steel standup stove with an adjustable grate and garbage containers. Water faucets are spaced at moderate intervals for convenient use.

Boat launching, removal and parking facilities are easily accessible. Even the most inexperienced driver can maneuver down the large 20-foot-wide launching ramp. Car and boat trailer parking is provided in the central parking zone, and parking around the perimeter is available for those who launch car top boats and for people who wish to enjoy a picnic near the water's edge. Two additional parking areas provide space for the casual passerby who desires to stop for a rest or a picnic lunch.

A large, modern structure that sits on the gently sloping terrain overlooking Big Arm Bay is equipped with electricity, running hot and cold water, flush toilets and change facilities. The front of this building has a partially covered deck which can be used for scenic viewing, photography and simply enjoying the perpetual cool breezes from the lake.

ACTIVITIES

Even though camping and picnic facilities are the most extensively developed at Elmo, other activities can be pursued at the site. To name a few: sun bathing, wading, beach combing, swimming, water skiing, scuba diving, fishing, boating, sailing, viewing, photography and just plain walking.

EDITOR'S NOTE—Anthony A. Buechel, 32, is Recreation and Parks Manager for the western part of the state (F&G Districts 1 and 2). He has a Master of Science degree in physical education and public (community) recreation, obtained in 1963 at Wisconsin State University, La Crosse. Prior to joining the department Buechel taught physical education in several Wisconsin schools and was Physical Education and Recreation Director for the Wisconsin Child Center in Sparta.

Polluted Mother Goose!

FROM THE **ECOLOGY PAPERS** SEWANEE TENNESEE

Hush-a-bye, Birdy.
On the tree top,
When the wind blows,
Your breathing will stop,
When the wind dies,
Your feathers will fall,
And down will come Birdy,
Springtime and all.

Jack be nimble,
Jack, be quick;
Jack, jump over
The big oil slick.

Jack and Jill went up the hill
To fetch a pail of water;
Jack came down with hepatitis,
And Jill came down soon after.

Little Bo Peep has lost her sheep
And doesn't know where to find them:
They ate some grass
Flavored with gas
Which seriously undermined them.

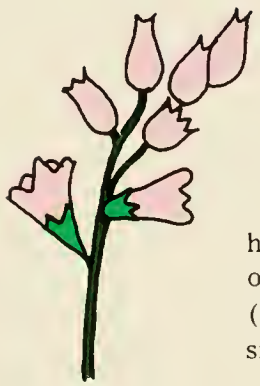
Mistress Mary, quite contrary,
How does your garden grow?
With Ford Sedans and Miller cans
And coke bottles all in a row.

Conservation News

MONTANA FLORA

AND WHAT IT MEANS TO WILDLIFE

SNOWBERRY



Snowberry, also known as buckbrush, is a member of the honeysuckle family and the genus *Symphoricarpos*. It is a deciduous shrub and thus loses its leaves each year. Five different kinds (species) of snowberry are found in Montana, mainly in moister sites along banks, hillsides and coulees.

Snowberry is an important food plant for deer and has been found to be the single most important food plant for white-tailed deer in north central Montana and North Dakota.

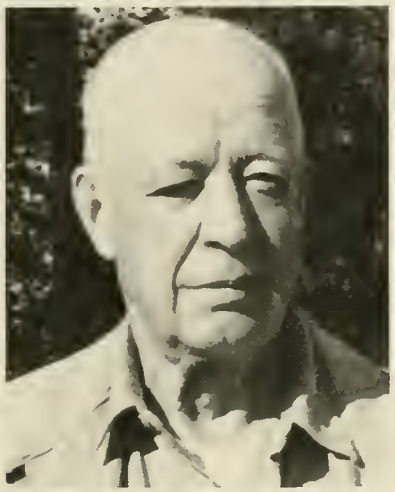
Merriam's wild turkey, blue grouse and sharp-tailed grouse also use buckbrush for food or cover and sometimes both, depending upon the season of the year. Snowberry patches near ponds or reservoirs are occasionally used as nesting sites by ducks in eastern Montana.

—Harley Yeager

F&G NEWS

A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

Helena man donates frontage to department



RAY KUHNS

Nearly a mile of river frontage on the Middle Fork of the Flathead River is included in the recent donation of a public access site to the Montana Fish and Game Commission. Donator of the 82-acre tract of land is Mr. Ray Kuhns, a retired civil engineer who lives near Helena.

The access site is located about three miles northwest of Essex and is bordered by U. S. Highway 2. Frank Dunkle, director of the Fish and Game Department, said the area is popular with bull trout and cutthroat fishermen. Deer and elk are frequently observed there, especially in the winter months.

Mr. Kuhns' donated tract provides an important access point to fishermen and other recreationists from Montana and out-of-state. The Middle Fork of the Flathead River is currently under study, along with the North and South Forks, for potential inclusion in the National Wild and Scenic Rivers System. Mr. Kuhns' generous gift assures that this beautiful tract of river frontage will always be accessible to Montanans and nonresidents for outdoor recreation.

(F&G photo by Otis Robbins)

a game bird's winter

by Roger Fliger

In Montana, game birds are often hard-pressed to survive Nature's winter fury and keep themselves fit for the spring nesting season. Deep snows bury food and shelter and make life miserable.

Winter causes a scarcity of good habitat to become a critical situation which often results in death by exposure and starvation of large numbers of game birds. However, if good habitat is maintained these hardy birds usually survive this difficult season. In spring they feast on new vegetative growth and reach breeding and nesting seasons in good physical condition. Their species are then replenished for another year.

For thousands of years, native game birds have endured Montana winters by adapting to the cold weather, howling winds and deep snow.

EDITOR'S NOTE: Roger Fliger, 36, was recently appointed department District Supervisor in Billings. Prior to taking the post he served as District Information Officer in Great Falls. His background includes a Bachelor of Science degree in zoology from the University of Iowa (Iowa City) and a post as public relations officer for the Iowa Conservation Department.

Introduced species such as the ring-necked pheasant and the Hungarian partridge likewise evolved in rugged climates so that they were prepared for the harshness of Montana's winters.

Department game biologists study the birds throughout the year to learn their needs. When a particular bird's habitat is lacking in some aspect, chances are the problem will show up during critical winter months.

The survival rate of many game birds is directly hinged to land use. Land simply cannot support large game bird populations unless the landowner gives some consideration to the needs of wildlife. Scattered weed patches, brushy fence rows, marshes, potholes and other uncultivated areas are essential to game birds. The ring-necked pheasant is especially noted for its dependence on the landowner.

BLUE GROUSE

Fall finds blue grouse heading for the high country. When winter comes, the blues are usually high on mountain ridges where they spend most of the winter in trees feeding on conifer needles.

SAGE GROUSE

Sage grouse gather in flocks (some as large as 100) with the first snow. These birds often move miles in their winter feeding activities. Sage grouse depend almost totally on sagebrush for food and cover during winter months.

SHARPTAIL GROUSE

Sharptails use stream bottoms and brushy ravines for winter protection. Weed seeds, willow buds and grain make up their winter diet.

HUNGARIAN PARTRIDGE

Coveys of Hungarian or gray partridges use weed patches around grain bins and abandoned ranch sites for winter food and shelter. Their diet consists mostly of weed seeds and spilled grain. A covey often crowds together in a circle or ball and uses the birds' own body heat to fend off winter cold.

RING-NECKED PHEASANT

Pheasants move into shelterbelts, thick weed patches or other similar cover during the winter. They feed in nearby grain fields and feed lots, thus depending directly on the farmer for winter subsistence.

WATERFOWL

Most waterfowl species wing their way out of Montana when winter strikes. A few species such as the mallard, several diving ducks (e.g. goldeneye, bufflehead, mergansers) and a few Canada geese remain in the state. As long as open water, food and gravel are available, these ducks and geese seem to endure Montana's frigid waters.

A game bird's winter is a tough one in Montana. However, with the correct amount of good habitat—food, water, cover, living space — it will usually survive.

dear F&G

A FRIEND IN D.C.

Thank you so much for sending me the various issues of MONTANA OUTDOORS. Congratulations are certainly in order and I commend you and your staff for the overall attractiveness and quality of this publication. In addition, the photography is excellent.

An outstanding article, "A Bad Spring on a Big Creek," appeared in the July/August edition. The problems of stream channelization have long been of concern to me. My statement on channelization as given before The House Government Operations Subcommittee last June might be of interest, and I am pleased to enclose a copy for your use.

I so enjoyed in the May/June issue Director Dunkle's editorial, "About Spring":

" . . . the time when bear cubs see their first light, when fawns, lambs and calves struggle onto a set of wobbly legs and seek their first meal, and when eggs crack to expose down-covered ducklings, chicks and goslings. Losses suffered in last year's hunting season and during the long winter are being replenished and then some."

May it always be so.

Nathaniel P. Reed
Assistant Secretary
of the Interior

WOLF CREEK CANYON

I was glad to see your article on "It's Not Just Another Road" (Sept./Oct. issue). How true.

I and my husband lived in the Missouri River-Wolf Creek Canyon for 36 years and we are the owners of the old kiln you mentioned. It is just three miles from Wolf Creek, where our children went to school.

You can't describe the beauty of the canyon in words, as it changes so much with the seasons. We have watched the elk have their babies from our kitchen window and have played with baby fawns of does that were so tame they didn't mind. We also watched the goats play up in the rocks and we saw bear quite often.

We sure enjoy the magazine —it is just like a letter from home.

Mr. and Mrs. Martin Lee
Kooskia, ID

A WORD OF PRAISE

The format and articles presented in the Nov./Dec. issue have brought MONTANA OUTDOORS, in my mind, to the position of the best official publication of any state fish and game department.

J. V. Lulack, M.D.
Plains, MT

FREEDOM OF SPEECH

MONTANA OUTDOORS is an outstanding publication. In the battle to overcome the inertia of conventional wisdom in wildlife management, a beautiful but forceful and correct state publication is a must; MONTANA OUTDOORS fills this need. I have been impressed with the selection of articles for the magazine because they have hit key issues and because the opinions expressed have been unhampered by weasel words and political payola.

Good luck in the coming years. I hope your freedom of speech is not cut off by inevitable changes in the political structure of Montana.

Peter T. Bromley
Hot Springs, SD

MILLSTONE

Your magazine is an excellent addition to any professional man's library. To be especially complimented is your "Animals of Montana" series. These and all of the issues graphically illustrate the professional excellence which is apparent within the Montana Fish and Game Department. It is somewhat sad, however, that the political side of game management in Montana has to be such a millstone around the managers' necks. And it is even sadder that the wildlife of Montana has to take the short end of the deal.

Robert Cheeseman
Volborg, MT

DON'T TAKE MONTANA FOR GRANTED

May the natives of your beautiful state fully appreciate what they have. I met a native of Butte who was visiting out this way and this particular person had taken Montana and its environment more or less for granted, but after spending a couple of weeks here in the crowded, polluted East he couldn't wait to get back home. Thank you from a future Montanan.

Stanley Popowicz
Quincy, MA

to answer your question

by Frank H. Dunkle

EDITOR'S NOTE—The department receives many letters and other inquiries each year requesting our position on various controversial topics. In the following article, Director Frank H. Dunkle answers three of the most common queries for our readers.

Q How will executive reorganization affect our wildlife and its management?

A As the law is now written, the effect of executive reorganization on wildlife depends on the philosophy, wisdom and integrity of whomever is governor and the officials he appoints.

Clarifying responsibilities and more efficiently arranging governmental functions to attain better performance and increased economy is clearly backed by the majority of the people. The people also consider their wildlife and its management of such importance that it merits a full-status agency (Fish and Game Department) in the streamlined governmental organization.

When the Fish and Game Department is activated by executive order into the new reorganized Department of Fish and Game, the chairman of the commission and the director of the department will both be appointed by the governor in office at the time. From then on both those men, plus the members of the commission, serve at the governor's pleasure. All appointees come under the gun every four years after the gubernatorial election.

When the people get to express their approval or disapproval of the way things are handled only every four years, this puts an awesome amount of power in the hands of a governor. In the past, the public has had access to comment forcefully on wildlife matters at any time on many levels. In the future their only source of appeal will be the governor.

Some of the most competent comments, recommendations and criticisms of environmental activities come from employees of government. These comments normally are based on scientific facts, uncolored by politics. Facts often reveal the necessity for a course directly opposite what might be politically expedient as far as resource and people welfare is concerned. It is one thing to be able to quickly and decisively remove deadwood from government payrolls. It is entirely different to expect conscientious, dedicated professional workers to perform in the public interest with a constant job threat hanging over their heads. Although executive reorganization as presently written appears to offer certain securities to workers, there is no way to escape the fact that the men doing the hiring and firing will be political appointees.

Executives get paid to cope with political pressure. Ordinary employees do not get paid to handle the uncer-

tainties in a potential spoils system. If the will of a particular governor, chairman or director ran contrary to the public interest and available evidence, every word of every department employee would have to be tempered by the political climate. Our public correctly regards "yes men" with suspicion.

Political appointees, even in technical fields, are as apt to be good as bad. Most officeholders, especially those elected for more than a single term, are honest, intelligent, well-intentioned public servants. The trouble is that the complexity and sheer size of the environmental job to be done means there is a great deal of room for honest error. Absolute political control of an agency from top to bottom means that a tiny number of persons can make airtight decisions which cannot be appealed or questioned and which may have irreversible consequences. Politically oriented solutions to problems tend to be of a blockbuster magnitude. Blockbusters make impressions of great energy expenditures, generate news and give the feeling "something's being done." We all know from personal experience as people in all walks of life, that in reality complicated problems rarely have simple blockbuster solutions.

Government as we know it is supposed to be conducted with the consent of the governed. Straight political appointment structures seriously restrict the governed from being able to voice either consent or dissent, except at four year intervals. The face of Montana could be permanently scarred several times in four long years at today's rate of change.

For while even the wisest, most honest and intelligent men can make mistakes, it is much less likely that any group of men will make as many mistakes when all their actions are fully open to public scrutiny and comment at all times rather than just every four years. Reorganization with modest changes could insure performance in the best interests of our wildlife and public.

Q What is your position on public lands?

A The lands administered by the U.S. Forest Service (Department of Agriculture) and the Bureau of Land Management (Department of Interior) are of foremost concern because they represent the majority of public land in Montana.

Public land has always been used for a variety of purposes, with and without formal sanctions, and with and without regard for its condition beyond the next day. As in all periods of our history, there are those who realize that our total producing land base supports us all economically and aesthetically; and there are those, who for their own purposes, fight every attempt to regulate their use of public land, no matter how much the regulations are in the public interest. But land rape is a subsidy the public will no longer tolerate paying for.

The traditional uses of public land include livestock, timbering and mining, hunting and recreation. Some of them, for instance livestock use, can be very beneficial when done correctly. In this case, livestock numbers and the timing of the grazing must be kept compatible with the land's ability to keep producing forage. Overgrazing can destroy land as surely as a bulldozer. Naturally, wildlife should figure into the forage use of land as well. When livestock and wildlife are correctly balanced with the range, their use is complementary, not competitive.

Timber harvest is another public land use which potentially can improve or destroy a land area. The need is to conduct the harvest in such a way that it can keep occuring throughout time, and in such a way that other uses of land are not disrupted.

Mining is a one-time thing. In many cases technology makes it possible to temporarily disrupt surface values and then restore them after the minerals have been extracted. In some cases restoration is impossible, and then the decision must be made as to which values of an area are most important to the general public.

Hunting and recreation are pretty mild uses of land, but again some regulations must guide these activities, because anything can be overdone. Hunting can be underdone, as well, by failing to produce a desirable wildlife harvest.

There seems to be a certain type of person who cannot stand the sight of land that does not have somebody intensively doing something to it, on it or in it. These people fail to realize that a land mass not receiving intensive human use at the moment is not just "sitting there." Natural processes are going on all the time. An example is the exchange of water between the atmosphere and the ground, with vegetation using this moisture as it flows in both directions and with fertile topsoil being continually produced as part of the action. Animal life influences and is influenced by the process as well. Land that is not often visited by many people is not idle by any means.

If true multiple use was always the guiding philosophy of overall public land use, the public could rest assured it was getting all the benefits possible from these lands. Multiple use ideally means that all possible land uses are conducted with the idea of maintaining unimpeded production for centuries—the kind of production that goes on whether man is present or not, and also the kind of production people carry on to satisfy the needs of our population. All areas would be used for the things which they are best suited and which do not degrade the land's ability to keep renewing its vitality.

It is mandatory that public land use includes both public and private endeavors, and that no use is heavier, faster or more intensive than the land and its resources can stand. Since one-third of Montana is public land, the public should exercise its right to insist that the long range multiple use concept be totally applied. The more you examine nature from all directions, the more obvious it is that locked-in single uses of land are very inefficient and uneconomical both spiritually and materially.

Q How do you feel about logging access roads in big game areas?

A By "access" we mean vehicle, not people access. This is something that must be examined and decided timber sale by timber sale. In certain key game areas there should be no logging at all. Where elk is the major game species, we generally feel that all spur, and in some cases system, roads should be closed after the logging. Elk are proven to need isolation from people in vehicles. In strictly deer areas too much vehicle access is rarely a problem. During our elk-logging study we are taking a conservative position pending what facts are determined from the study. (For more detailed discussions, see "everyone's talking about access," page 8, and "Elk and Timber," page 38, of this issue.)

TAKE HEED OF OUR OLD ENEMY,
THE ROCKY MOUNTAIN WOOD TICK...

Its Bite Can Be Deadly!

by Louise Fenner

IN 1902, spring in the Bitterroot Valley of western Montana was a beautiful time for a child to play outdoors. One day a little boy came in complaining of headache and chills, and soon he was tossing with fever. The doctor, on a hunch, asked the mother whether her child had any tick bites in the last few days. Yes, she said, but she had thought nothing of them. She supposed that there weren't any more ticks on him, but she hadn't checked lately.

The child was taken to a hospital in Missoula. He lay ill for two weeks, then suddenly became delirious. An ugly rash of dark spots covered his body. No medicine had any effect on his illness, and within a week he died. He was four years old.

His disease, then called "black measles," is now known as Rocky Mountain spotted fever. The doctor suspected that the tick bites were to blame, but everybody else insisted that the little boy must have drunk some contaminated snow water. Several years passed before science proved that the doctor, after all, was right.

Tragic deaths from spotted fever occurred all too frequently in Montana at the turn of the century, not only because the curative antibiotics didn't exist, but because people were unaware that one of their most common pests transmitted it. Ticks were generally ignored, parents didn't examine their children, and men didn't immediately remove ticks they found on themselves. Consequently, the fatality rate from Rocky Mountain spotted fever in the early 1900's in Montana's Bitterroot Valley was a terrifying 80 per cent.

We no longer ignore the tick's dangerous bite; we try to prevent it. This is the safest possible reaction, for no medicine in the world can be as effective as prevention.

What are the possible consequences of a tick bite? Rocky Mountain wood ticks (*Dermacentor andersoni*), the most dangerous species found in Montana, can transmit Rocky Mountain spotted fever, Colorado tick fever, tularemia and Q fever. In addition, certain female ticks can produce a toxin that paralyzes and can even kill the victim.

Although deaths from tick-borne diseases are rare, the chances are still great enough to make the tick a dangerous pest. Some 20 to 30 persons in the United States die of Rocky Mountain spotted fever annually. Tick paralysis may also claim an occasional victim. Virtually all of these deaths are on the East Coast where spotted fever, once recognized only in western Montana and Idaho, is often misdiagnosed as measles and not properly treated until it is too late. Montanans are lucky in one respect—physicians are familiar with the symptoms and are able to treat spotted fever in the early stages when it is still very curable. The last Montana fatality was in 1960.

ROCKY MOUNTAIN WOOD TICK

Ticks need blood for their development. About half of the world's 800 different species are known to feed on man, and many of these are able to transmit typhus-like diseases in almost every part of the world. The Rocky Mountain wood tick is one of the worst offenders because of its ability to transmit at least four human diseases as well as tick paralysis. Two other species of ticks also carry spotted fever, but one is not found in Montana. The other species, called the dog tick (*Dermacentor variabilis*), has been

The Rocky Mountain wood tick. Male, left, has a full shield on its back while the female, right, has only a partial shield to allow for expansion of her body during engorgement.

Both sexes can transmit Rocky Mountain spotted fever and three other human diseases. In addition, the female sometimes produces a neurotoxin that causes paralysis in the host. (Photos courtesy of Rocky Mountain Laboratory)

found in eastern Montana, in northern Idaho around the Clearwater and Snake Rivers and as far west as Yakima, Wash. It is responsible for most spotted fever cases in the East and Midwest.

All the western United States and western Canada except the Pacific Coast host the Rocky Mountain wood tick. (Scattered populations have recently turned up in several California counties.) It makes its home in mountainous and sagebrush areas and is particularly abundant near the sites of rodent populations such as the warm south-facing slopes of the lower parts of canyons. In early spring the fragile, loose soils consisting of decayed granite will be full of hungry ticks just coming out of hibernation. They crawl onto grasses and low vegetation, usually no more than 18 inches above the ground, awaiting the opportunity to attach themselves to people or animals that brush against the plants.

Ticks come with the buttercups. When the snow melts and vegetation starts to grow, the "tick season" begins. This varies in different elevations, different latitudes and different years, but usually ticks are active from late March or early April to late June or early July. Higher temperatures and less moisture cause them to disappear, although it is not impossible to encounter them in the fall or even winter under exceptional conditions.

Both male and female Rocky Mountain wood ticks are flat and somewhat oval in outline and mottled reddish brown and gray. However, when the female tick is engorged with blood it becomes greatly distended, often a half to one-inch long and grayish in color. It is so different from the male tick in appearance that many people do not recognize it as a tick. The male does not distend because of a hard shield covering its body.

Ticks on the average have a two-year life cycle, although they can live longer if a blood meal is not available immediately. Adults of both sexes feed on larger animals (man, horse, cow, sheep, elk, deer, bear, coyote, goat, etc.) and to some extent on smaller animals such as porcupine and jack rabbit. When fully fed (in about nine days) the female tick drops to the ground and seeks a protected place to lay a mass of eggs, numbering from 5,000 to 10,000. (The male dies after feeding for a short time and mating.) The eggs hatch into larval or "seed" ticks which seek small host animals, usually rodents, to feed on. They then drop to the ground and transform into the next stage, the nymph, which usually undergoes hibernation in the winter.

In early spring the nymphs wake from hibernation and seek small animal hosts (neither larvae nor nymphs show a great deal of interest in man). After feeding they drop off, find cover and transform into adult ticks, thus completing the life cycle. Adult ticks look for hosts until the hot, dry weather of early summer arrives. If they are unsuccessful they go down to the ground for shade and moisture and hibernate there during the winter. They emerge in the spring to look for a meal, and if still unfed by winter they go into hibernation a second time and come out again the next spring, probably for the last time.

Chances that any one tick will transmit Rocky Mountain spotted fever are actually fairly small. The infection rate for spotted fever among

ticks varies from less than one per cent to about five per cent in different localities and in different seasons, and may be as high as 11 per cent in some areas. Some five to 10 per cent of the ticks may be infected with Colorado tick fever (although it can go as high as 40 per cent.) However, it is impossible to tell whether or not a tick is infected by looking at it. Laboratory tests can determine this, but the illness shows up in humans before tests can be completed.

ROCKY MOUNTAIN SPOTTED FEVER

Rocky Mountain spotted fever is the most feared disease transmitted by the Rocky Mountain wood tick because of the severe symptoms and the formerly high mortality rate. It first appeared in the late 19th century in the Bitterroot Valley of western Montana, killing four out of every five people who contracted it. Ten to 20 settlers died annually while doctors stood by helplessly, not even knowing how the disease was transmitted.

The victim was usually someone who had been up in the mountains west (never east) of the Bitterroot River. Settlers thought that drinking melted snow water had something to do with it, for there was not much else a sheepherder or stockman could drink when he went into the foothills with his animals in the spring. The rest of the state was apparently free of the disease, although a milder form appeared in Idaho with greater frequency but with a much lower mortality rate. The plague was so bad in the Bitterroot that it even affected land sales and caused many potential buyers to look elsewhere.

Finally in 1906, Dr. Howard Taylor Ricketts of the University of Chicago proved that the Rocky Mountain wood tick was the agent responsible for transmitting the disease to man. (The rickettsial diseases, a group that includes spotted fever, Q fever, scrub typhus, typhus and others, have been named after him, and the microorganism that causes spotted fever also bears his name —Rickettsia rickettsii.)

Early attempts to fight the disease consisted mainly of tick control measures: sheep and cattle dipping; extermination of rodents that carried the tick, particularly gophers, by shooting and poison; "controlled pasturage," in which fields were fenced off to keep cattle out and were cleared and cultivated to discourage ticks. Meanwhile, scientists were trying to study the habits of ticks and the cause of spotted fever (ticks just transmit it) at a time when funds for research were nonexistent. They set up their "laboratories" in abandoned cabins, woodsheds, and vacant farmhouses and did the best they could.

Suddenly in 1914 spotted fever was recognized over all of Montana. Cases were appearing east of the Rockies, hundreds of miles from the Bitterroot Valley. A research center was obviously needed to coordinate investigation and control of the deadly tick. In 1921 an abandoned schoolhouse outside of Hamilton became the first Rocky Mountain Laboratory, and it was here in 1924 that two United States Public Health Service (USPHS) scientists developed the first spotted fever vaccine and tried it out on themselves.

Spotted fever vaccine is now safely produced by commercial laboratories using embryonated chicken eggs, but in the early years it was manufactured from ground-up diseased ticks. Scientists had to rear more than one million ticks and infect them with spotted fever every year. It was extremely dangerous work and the old schoolhouse was far from a safe place for it; in fact, the city fathers of Hamilton required that a moat be built around the building to prevent disease-laden ticks from escaping and infecting the town.

Despite all precautions, three men working in the old schoolhouse lost their lives to spotted fever. They increased to five the number of scientists who had died in the fight against this disease, since two had died before 1921. (The total is now 11.) In 1928 a new "tick-proof" laboratory was built in Hamilton by the state of Montana, partly because the people of Montana exerted pressure on the state and federal governments. (The schoolhouse is now a state monument and museum maintained by Dr. William Jellison, a retired USPHS parasitologist.)

The Rocky Mountain Laboratory is now owned by the Public Health Service and employs 145 workers, 27 of them doctoral-level researchers. It houses the largest collection of hard- and soft-shelled ticks in the world—more than 800 species. However, the lab no longer concentrates on the

Actual size of both sexes unengorged.

Actual size of engorged female.

Compare the size of an unengorged tick with that of a fully engorged female. She will lay 5,000 to 10,000 eggs, and if she is infected with Rocky Mountain spotted fever she will pass the disease on to her offspring.

Frequent self-examination for ticks—no less than twice a day—is the single most important and effective preventative measure against spotted fever and other tick-borne diseases.

study of Rocky Mountain spotted fever and no longer produces the vaccine; in fact, tick-borne diseases play only a small part in the current research. Primary emphasis is placed on the immunology of tuberculosis, on molecular biology, on medical entomology and acarology, and on the pathogenesis of four slow viral diseases in animals. In the 44 years since the new facility opened, only two research-linked deaths have occurred, neither of them from spotted fever.

TICK SHOTS

In 1944 the University of Montana students newspaper bemoaned, "The tortured souls of Dante's 'Inferno' would have been right at home on campus when 510 university inmates were laid low by a harrowing plague." The students were getting their annual tick shots.

Tick season every spring used to mean vaccinations against Rocky Mountain spotted fever for hundreds of Montanans. The side-effects were often sore and swollen arms, fever and nausea. Tick shots saved lives, however, and they were widely used for more than three decades. The Board of Entomology reported in 1929 that spotted fever vaccine had cut the death rate in the Bitterroot from 80 per cent to 19 per cent; in eastern Montana and south central Idaho, where a milder form of spotted fever was found, the disease was virtually eliminated among those vaccinated.

Now the clinics that used to appear every spring to administer tick shots have disappeared and the vaccine is no longer recommended for general use. It does not prevent spotted fever but only reduces its severity, and it is useless against other tick-borne diseases and tick paralysis. In addition, broad spectrum antibiotics developed in the 1950's can clear up spotted fever symptoms within 48-72 hours if the disease is treated in the first week.

"The spotted fever vaccine was greatly overrated," said Dr. David Lackman, director of the microbiology laboratory for the State Department of Health. "Its main value was making people conscious of where spotted fever came from so they learned to be afraid of ticks."

EDITOR'S NOTE—Louise Fenner, 23, was graduated from the University of Montana, Missoula, in 1970 with a Bachelor of Arts degree in journalism. She has served as editorial assistant on MONTANA OUTDOORS since joining the department in November, 1970.

The emphasis is now on "tick hygiene," he said. People are urged to examine themselves often —at least twice a day—for ticks if they are in woody or brushy areas during early spring, and to immediately remove any they find on themselves.

Dr. Robert Philip, assistant director of the Rocky Mountain Laboratory, made the same point. "The vaccine is only one means of prevention," he said. "There is a danger of becoming too complacent if you are vaccinated, and of failing to check your clothing and body for ticks carefully enough."

The only people who are regularly vaccinated for spotted fever are workers at the Rocky Mountain Laboratory. Certain "high-risk" groups may also benefit from it, such as loggers and other people who are so continually in the woods and brush that they cannot effectively examine themselves. This does not include the average spring and summer camper, fisherman and hiker.

HOW TO HANDLE A TICK

Frequent self-examination for ticks (no less than twice a day) is the single most important and effective preventative measure against spotted fever and other tick-borne diseases.

Chances are that the tick will be found crawling around trying to find a suitable spot to bite. Often a tick will explore for several minutes or even hours before attaching—and during this time it is still harmless.

Trouble starts only when the tick bites. Unfortunately, this can seldom be felt. Scientists suspect that ticks secrete a fluid that anesthetizes the area around the bite.

Another important reason for frequent self-examination is that the risk of spotted fever is directly related to the amount of time a tick has been attached. The spotted fever organism (rickettsia) in an infected tick is dormant and must be reactivated with blood while the tick is engorging. Guesses about how long reactivation takes range from one hour to 24 hours. The important point, however, is that the longer an infected tick is attached, the greater the risk of disease transmission.

People who are going into woody or brushy areas during the tick season should remember these important rules:

1. *Don't forget to examine your children as*

well as yourself, and include all clothing in the examination. Be sure to check beneath the hair, the back of the neck and the genital area where ticks are often missed.

A special danger to children is tick paralysis, which is caused when an occasional female tick injects a neurotoxin as it feeds. This toxin can eventually kill the victim by interfering with the part of the brain that controls breathing; children seem to be affected more severely than adults, and fatal cases are reported nearly every year. The highest incidence of this disease occurs in girls whose long hair protects the tick from discovery while it is engorging. This is particularly tragic because removal of the tick can bring about improvement in as little as 30 minutes, and complete recovery soon follows.

Another disease which can be more severe in children than adults is Colorado tick fever (CTF). It is usually mild and often mistaken for a light case of Rocky Mountain spotted fever, but fatalities have occurred. Colorado tick fever is much more prevalent, possibly because the tick only needs to bite in order to transmit it (unlike spotted fever, which requires some engorgment of the tick.)

2. *Locate your campsite away from areas where small animals such as rodents abound, since they host all stages of the tick.*

3. *Wear close-fitting clothing of tightly woven material and wear boots in the field.* Keep shirts tucked into trousers and trousers tucked into boots, but wear your socks outside your pants. Ticks tend to crawl upward and these measures will impede their penetration of your clothing.

4. *The use of a repellent on clothing and exposed areas of the body may help to keep ticks off.* Those repellents containing diethyl toluamide are the most effective. Remember also that ticks are attracted by the carbon dioxide given off by the skin, and the greatest amounts are given off when you perspire.

5. *To remove a tick attached to the body, grasp the tick with tweezers or between your fingers and exert a gentle, steady pull.* Twisting it or pulling it forcibly may cause it to break and leave the mouth parts in the skin. Holding the lighted end of a cigarette close or applying a light oil to the tick (mineral oil, vaseline, hair oil, etc.) may aid in its removal.

Take care not to crush the tick because infection can be acquired through unbroken skin.

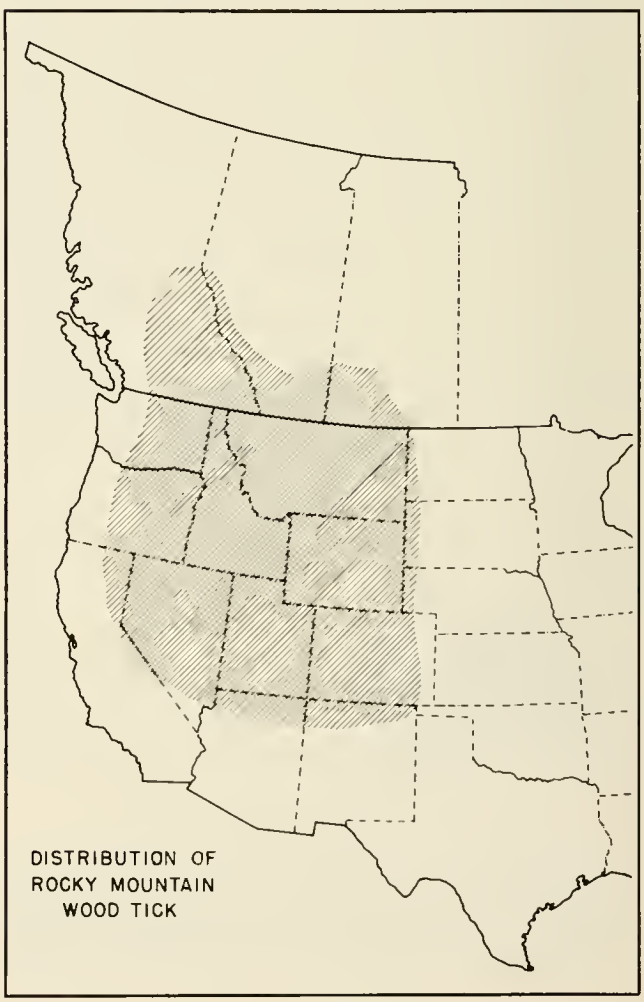
Apply an antiseptic to the site of the bite or cleanse the area thoroughly with soap and water. Wash your hands thoroughly and avoid touching your eyes or any sores such as pimples until your hands are clean. If you are unable to remove the tick completely, see a physician.

6. *If you develop a fever within four to six days after exposure to ticks, report to a physician.* The symptoms of spotted fever the first few days are headache, high fever, generalized aches, chills and loss of appetite. The measles-like rash appears on the second to fifth day. Treatment is very successful if started within the first five days of the disease's onset.

Ticks should not be ignored. They are dangerous pests that cause between 200 and 500 cases of Rocky Mountain spotted fever every year in the United States (mostly in the East). Nearly five per cent of these victims die because their disease is not recognized and treated in time.

In Montana only two to five cases appear every year, despite our large tick population. No deaths have resulted from spotted fever for 12 years. The single most important reason for the decline of spotted fever in Montana and all the West is not vaccine or antibiotics—it is awareness of the dangers of tick bites.

The tick is definitely a bug to avoid.



DISTRIBUTION OF ROCKY MOUNTAIN WOOD TICK

book reviews

BLESS THE BEASTS & CHILDREN, by Glendon Swarthout, Doubleday, 1970; paperback, Simon & Schuster, 95c.

Take a few dozen cliches, match them with an equal number of stereotypes, whip them up with an emotional, barely tenable basic premise and you have *Bless the Beasts & Children.*

Billed as a story about "six adolescent misfits," *Bless the Beasts & Children* has scarcely a single character on any page who is not portrayed as a misfit of some kind.

For various unkind parental reasons, first of which is a passionate desire to stash their sons out of sight for a summer, the boys are attending an almost credible Arizona boys' camp. Rather accidentally they are traumatized by observing part of the annual thinning of an Arizona Game and Fish Department domesticated bison herd. The boys steal a truck and a gun during the night, release the remaining bison-to-be-slaughtered, and hold off several people with .22 rifle fire. In a melodramatic last-second denouement, the leader of the boys drives a pickup off the Mogollon Rim to his death. The reader is left to figure out whether the truck hurtled over the rim because during his first trip behind the wheel the driver couldn't stop, or whether he intentionally committed suicide.

Director Stanley Kramer neatly added a stream of vulgar language to the "six adolescent misfits' " vocabularies and turned *Bless the Beasts & Children* into his idea of a motion picture epic. In Kramer's words as reported by BROADCASTING magazine, the movie "would raise such a ruckus that maybe it would bring about the enactment of more comprehensive and restrictive gun control regulation." In order to create the hoped-for ruckus, the plot is twisted so that the tires of the kid's stolen truck are shoot-out targets, with the driver predictably being killed by a shot, rather than killing himself by driving over a cliff as in the book. The implication of the film's ending appears to be that gun owners don't mind shooting children. The absurdity of this film fizzle has so far reportedly caused it to crash at the box office.

Unfortunately, some readers and viewers of this pair of emotion exploitations may take them seriously and thereby acquire misleading opinions about both beasts and children.

— Bob Carroll

OUTDOORSMAN'S HANDBOOK, by Clyde Ormond, Outdoor Life and E. P. Dutton & Co., Inc., New York, hard cover, $5.95.

Do you know how to throw a diamond hitch? Make an elk bugle? Estimate the size of a flock of geese? Cook a moose nose? Make a rabbit-skin blanket?

If you don't think you could handle any of these chores or numerous other small duties involved with outdoor life, then you will enjoy the *Outdoorsman's Handbook.*

Granted, there is a lot of information in these 323 small pages that you will probably never need, but even if you use the book only a couple of times, it's worth it.

Most of the 100 or so short "how to" items are about one to three pages long, which obviously makes them less than complete. On certain occasions, the reader will be forced to refer to a more comprehensive book for additional details. But, then, this catchall handbook wasn't meant to be a detailed collection of outdoor handicraft. For its intended reader, the avid outdoorsman who doesn't maintain a large library, it's excellent.

If I were limited to only one "how to" book of outdoor lore, this would be the one.

— Bill Schneider

WORLD WILDLIFE: THE LAST STAND, by Phillip Kingsland Crowe; Charles Scribner's Sons, New York, hardback $7.95.

Crowe is a diplomat, sportsman, journalist, conservationist and man of many talents. WORLD WILDLIFE is a report of his worldwide journeys on behalf of the World Wildlife Fund, which is active in assisting several countries among the emerging nations to set up modern conservation practices. The problem, as described by Crowe, is one of money priorities and of fostering a desire for conservation in the places it is most needed.

For many dwindling species, the first steps urged by the Fund are those of full protection. Some of the countries visited had some game preserves or refuges, but enforcement was spotty because of lack of manpower. Many Asian, African and South-Central American countries expressed a willingness to explore establishment of conservation practices.

Crowe writes in a chatty, informative manner and applies an optimistic outlook to a pessimistic situation. Readers can see for themselves the attitudes of various countries toward their wildlife, and can make interesting comparisons with conservation practices in the United States.

—Bob Carroll

ELK & TIMBER

A PUBLIC LAND JIGSAW

by Gene Allen

ELK and timber are two of many resources provided by Montana's forested lands. In recent years, management and utilization of these resources have become more intensive, complicated and not always without conflict. Demands for both elk and timber are increasing. Unless future land management provides for the needs of all resources, conflicts in resource management will increasingly be a part of the Montana scene.

Three states—Montana, Idaho and Wyoming—provide approximately 50 per cent of the nation's elk harvest while furnishing only 11 per cent of the nation's sawtimber volume. The nation's need for wood and wood products makes timber harvest a necessary and legitimate use of public forests—but the elk range provided by these same lands may hold the key to the future for this popular big game animal and the recreation it provides. Considering these facts, public land management decisions tempered with consideration for elk are justified.

Many ingredients are needed for suitable elk range; food and cover are two of the most obvious ones. However, these ingredients do not in themselves guarantee suitable elk range.

The situation can be compared to a jigsaw puzzle. All of the correct pieces assembled in the wrong way simply will not work; to be meaningful, they must be arranged properly. The same thing is true for elk range—the essential ingredients must be arranged properly for a piece of land to become potential elk habitat. *The proper arrangement, or juxtaposition, of environmental components is one of the most important single factors in the determination of wildlife habitat.*

In Montana, elk survive in a variety of habitats ranging from the gentle, sparsely timbered terrain of the Missouri Breaks of central Montana to the rugged, heavily timbered area west of the Continental Divide. This variety of environmental conditions is even greater when the entire North American range of the elk is considered. However, one factor is common to each area supporting a wild elk herd—forested land.

Because the elk is a product of the forest environment, activities altering that environment will also change that area's ability to produce and support elk. Logging is an activity which can severely alter the forest environment. In most instances, the question, is not "Will these changes affect elk?" but rather "How will they affect elk?"

Logging can alter the forest environment in two basic ways (1) removal of tree cover resulting in a modification of elk habitat and (2) road construction resulting in increased access and the potential for contact between elk and people. Either change may have good or bad effects on elk, depending on local conditions. Before the effect of specific logging operations can be predicted, knowledge of the ecology and behavior of elk in various areas of the state must be improved.

EDITOR'S NOTE—Eugene O. Allen, 38, is research coordinator for a cooperative elk-logging study that involves the department and four other state and federal agencies. He has also worked on elk studies in the Gallatin and has served as a department game management biologist in Dillon. Allen obtained a Bachelor of Science degree in biology from Jamestown College (North Dakota) in 1955, and a Master of Science degree in wildlife management from Montana State University, Bozeman, in 1965.

CLEARCUTTING

The same logging practice may have different impacts on elk in different places. Clearcutting, for example, often benefits elk west of the Continental Divide by increasing their winter range; east of the divide, however, winter range is seldom created.

West of the divide elk are primarily winter browsers, wintering on south- and west-facing brush-covered slopes that were created by extensive fires 30 to 50 years ago. As these brush fields grow out of reach of elk or are "replaced" by conifers through plant succession, the area's ability to produce and support elk declines.

In western Montana it has been demonstrated that timber harvest can increase elk forage. A department study was made on Tamarack Creek near St. Regis where 100 acres within the winter range zone were clearcut during the 1966-67 winter and were burned in the fall of 1967. Evergreen ceanothus and serviceberry, both palatable browse plants used by elk, were counted and measured on sample plots the fall before logging and each summer since. The study found that evergreen ceanothus increased from 0.4 plants per plot before timber harvest to 140.5 seedlings per plot the year after burning. In July, 1971, after normal high seedling mortality, there were still 8.8 plants per plot—22 times more than before logging and burning. Serviceberry increased to 4.5 plants per plot compared with 1.1 before timber harvest.

Another study, conducted on two areas in the Ward Creek drainage west of St. Regis, again showed that logging practices could favor elk management. Both areas were clearcut in 1962; in 1964, one area was burned while the other was scarified with a bulldozer but not burned. *In 1968 the unburned clearcut had eight times more palatable browse than the unlogged control area, while the burned clearcut had 18 times more.* Redstem ceanothus, an extremely valuable browse plant, showed the greatest response to logging in this area.

While these two studies indicate that clearcutting can be effective in increasing palatable browse, this browse must occur where elk can use it in winter or it is of little value to them. Juxtaposition is just one of many "maybes" which must be considered when evaluating the worth of a logging practice with respect to its impact on elk.

The effect of clearcutting east of the divide is far less beneficial than on the western side. Many of Montana's largest and most successful elk herds occur on the east side, where they inhabit areas of scattered timber and winter on grass ranges. *For these herds, clearcutting seldom creates additional winter range and often has a negative effect on cover value.*

LOGGING ROADS

A major concern of game managers is the impact of road construction and increased access into back country areas, both on elk and on the

"Too much access" caused by thousands of miles of logging roads poses a potential hazard to Montana elk herds. (F&G photo by Eugene Allen)

Clearcutting has good and/or bad effects on elk populations. Since each location and cut is different, no general statement can be made concerning the effect of clearcutting on elk. (F&G photo by Eugene Allen)

sportsman's opportunity to hunt elk. A 1970 department survey of road access in F&G District Two (headquarters Missoula) revealed that only 26 per cent of this 11,000-square-mile area was more than one mile from a road.

Between 1963 and 1967 an estimated 1,200 miles of logging roads were built in the Montana portion of the Bitterroot National Forest. New logging roads continue to be constructed at a rapid rate. *As road access increased, the length of either sex elk hunting seasons decreased.* The opportunity for either sex elk hunting in District Two has declined from an average of 40 days in 1960 to 17 in 1970. Increased access allows more hunters into more places, making elk more vulnerable and resulting in an accelerated rate of harvest. In the future, increased access will dictate even more widespread hunting restrictions.

Preservation of hunting opportunities will necessitate closure of spur and unnecessary roads, a slowdown in new road construction and travel restrictions on some main access roads. In 1971, the U. S. Forest Service effected road closures and travel restrictions in some local problem areas. Restrictions and closures of this nature will become more common and will help preserve the opportunity to hunt.

MORE INFORMATION NEEDED

At the present time, information is not adequate to solve these conflicts in resource management. Research is needed to understand the habitat requirements of elk, to determine elk behavior in response to logging activities, to determine the long-term effects of timber harvest on elk populations, and to develop ways to effectively manage timber and maintain elk habitat.

In 1970 a cooperative research effort was initiated to study some of these resource management problems. Participants in this joint study are the Montana Fish and Game Department; the Northern Region and Intermountain Forest and Range Experiment Station, U. S. Forest Service; the School of Forestry, University of Montana, Missoula; and the Bureau of Land Management, Missoula District.

Several study areas both east and west of the divide have been established to investigate various phases of the overall problem.

The Burdette Creek-Deer Creek study area is 25 miles west of Missoula and is an area of closed-canopy mature forest and browse winter range typical of much of western Montana. The Long Tom Creek study area lies 20 miles southwest of Butte in an area representative of the more scattered forest type east of the Continental Divide. Both areas were unroaded prior to the study and both will be studied before, during and after logging. Major objectives of these studies are to determine the distributional and cover use patterns of the elk populations and to detect changes during and after logging.

The Sapphire study area is located in the northern portion of the Sapphire Mountains southeast of Missoula. This area has already been extensively logged and more timber-cutting is planned. Major objectives of this study are to determine behavior patterns of elk with respect to existing clearcuts, road systems and unroaded areas, and what effect additional logging will have.

Chamberlain Creek is an unroaded drainage of solid-canopy forest in the Garnet Mountains, 35 miles east of Missoula. Except for providing some fall escape cover, this drainage is only lightly used by elk. The plan here is to develop the drainage with a land management "package plan" and see which practices, if any, enhance the area for elk.

Road closures and travel restrictions will become increasingly more widespread. Because these closures will affect elk and elk hunting, it is necessary to know their impact if we are to make the best use of them. Two study areas, one in the Upper Ruby River drainage of the Gravelly Mountains in southwestern Montana, and the other in the South Fork of the Judith River of the Little Belt Mountains in central Montana, have been selected to evaluate the effects of road closures and travel restrictions on elk and elk hunters. After two years of study under normal hunting conditions, certain roads will be closed to vehicle travel. Major objectives are to determine changes in elk distribution and behavior, hunter success and hunter use of the area as caused by the travel restrictions.

Information from this cooperative study will be used to formulate guidelines for forest managers that can insure maximum compatibility between timber and elk management goals. However, guidelines alone will not automatically result in compatible resource management programs. These programs will emerge only after game and timber managers recognize the interrelationships between elk and forested land and then work cooperatively towards management programs which fulfill the needs of both.

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WHO NEEDS THE HUNTER

RECENTLY, hunters have been taking many shots (mostly in the back) for allegedly devastating our wildlife populations. In reality, the exact opposite is true. Hunters float a large part of the nation's conservation effort with their funds, time and non-apathetic attitudes. They support taxes on themselves to pay for wildlife restoration, fund conservation agencies, buy habitat for all wildlife (game and nongame) and do everything they can to preserve and enhance the resource they love.

Many shots come from people who casually hop on the "no-hunt wagon" to conform to the surge of emotionalism that usually starts somewhere in urban America. They believe that hunting is slowly destroying wildlife and should be banned . . . or, in short, *"Who needs the hunter?"*

A pheasant looking for weed seeds on a six-foot snowdrift needs him. An elk stretching its neck to reach the last unnutritional ponderosa pine twig on an overused winter range needs him. A pintail taking its last breath before yielding to an outbreak of botulism on an overcrowded marsh needs him. And all other game species that depend on the hunter to keep their numbers within the limitations of their habitat need him. Even from a strictly humane standpoint, death via a hunter's bullet is more desirable than disease or starvation.

All our wildlife—hunted or non-hunted—needs hunters' dollars to buy more habitat and enhance what already exists, enforce game laws, research its diseases and inform the public about its needs.

Besides the essential part the hunter plays in the lives of wildlife, he is important to all Montanans. Most of the department's budget comes from sportsmen's license fees, which then are passed on for wildlife restoration in many ways.

Hunter's dollars are also used to battle the ever-worsening problems facing wildlife—habitat destruction, pollution and land misuse. Since wildlife acts as an environmental indicator, all these forces will eventually affect us in the same way they do wildlife. Unless checked, the problems of wildlife soon become ours . . . for the needs of wildlife reflect the needs of man.

Although secondary to the benefits hunters provide for our environment, the gameseekers also pad our pocketbooks. Millions of dollars are spent each year on the pursuit of hunting. Outdoor recreation ranks as the third largest industry in Montana, and to many Montanans outdoor recreation means hunting.

Anyone hunting the hunter with pungent words, legislation, advertising or documentaries doesn't know that the hunter benefits all men and all wildlife. The livable environment for wildlife sought by hunters will also provide a quality environment for man . . . including the nonhunter.

The sport's critics should let their hearts be warmed by the cold chill of the opening day and be thankful for the hunter because hunting is needed by all animals . . . including man.

Frank H. Dunkle

FRANK H. DUNKLE

A LIVABLE ENVIRONMENT FOR WILDLIFE IS A QUALITY ENVIRONMENT FOR MAN

the golden eagle
one of only 10,000 remaining in the U.S.